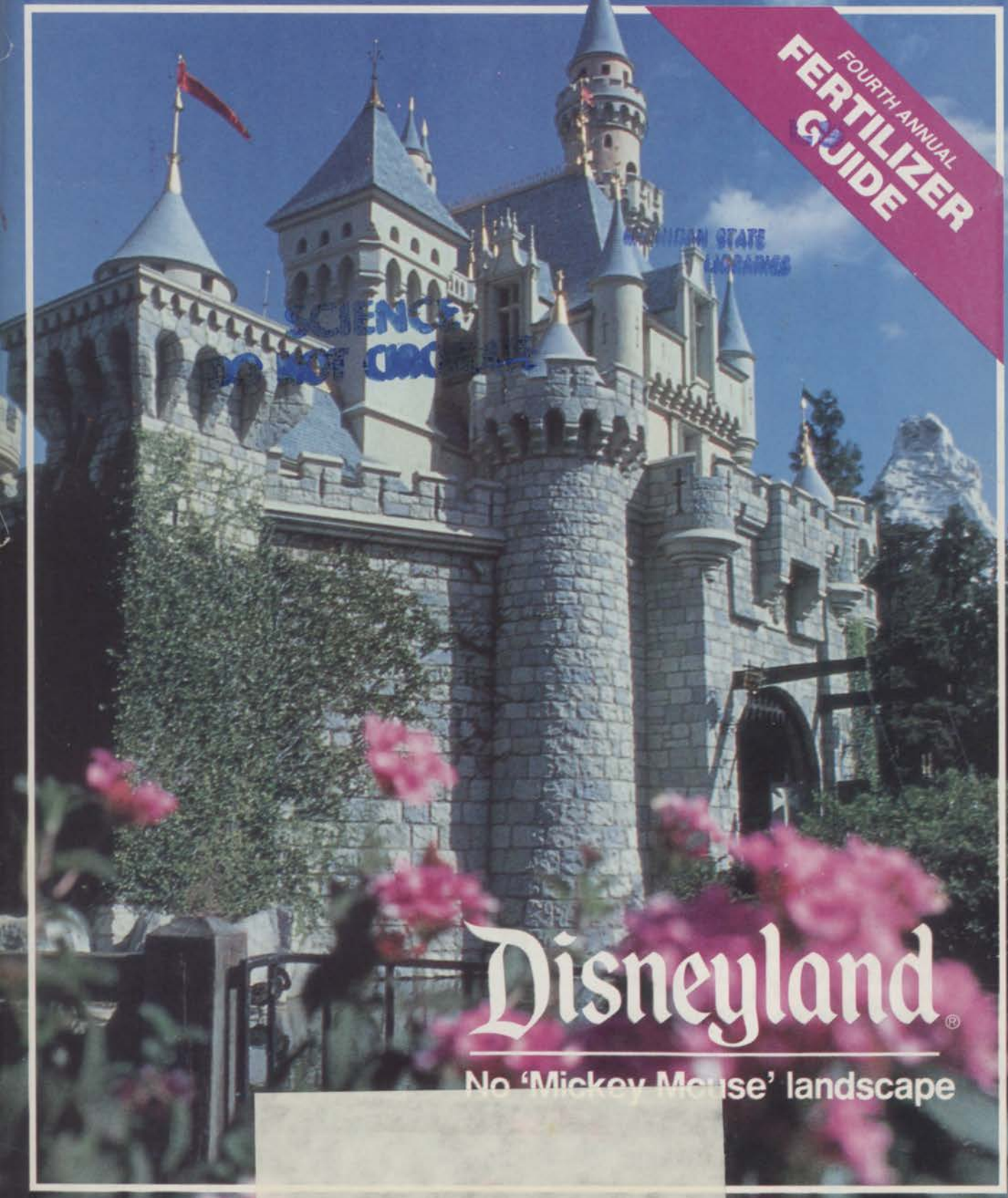
AN HBJ PUBLICATION

AUGUST 1986/$2.50

WEEDS TREES & TURF

The Magazine of Landscape and Golf Course Management Since 1962



FOURTH ANNUAL FERTILIZER GUIDE

MICHIGAN STATE LIBRARIES

SCIENCE DO NOT CIRCULATE

Disneyland®

No 'Mickey Mouse' landscape

While nobody was looking, Fairmont developed a Limb Lopper power pack that lets you trim branches quietly without being tied to your truck.

A hundred feet or a hundred yards. Distances no longer matter with the quiet, self-contained mobile hydraulic power pack from Fairmont.

This compact, highly portable unit weighs just 53 pounds. It supplements the hydraulic outlets on your truck to let you do ground and ladder trimming beyond your truck's normal 25-foot hose limit. Best of all, it works with the tools that you're already using in your basket.

The practical benefits of Limb Lopper's mobile power pack are obvious. No longer do you have to equip each truck with manual and gasoline-powered tools for jobs that a basket can't reach. One set of quiet, efficient hydraulic tools takes care of every tree-trimming job.

Many of the big commercial tree-trimming companies have already switched to Limb Lopper chain saws, circular saws, and shade-tree pruners. It's easy for you to do the same. Just phone or visit your nearest member of Fairmont's trained, dependable Limb Lopper dealer network. Or write: Fairmont Hydraulics, a division of Fairmont Railway Motors, Bldg. B, Suite 408, 800 Roosevelt Road, Glen Ellyn, IL 60137. Phone (312) 790-1690.

Limb Lopper

Fairmont®

Fairmont Hydraulics
Division of Fairmont Railway Motors

A DIVISION OF harsco CORPORATION

Circle No. 111 on Reader Inquiry Card

The pros chose SHADOW

"As professional lawn care specialists, we want our customers' lawns to advertise for us. One of the major problems we find in many of our customers' lawns is stressed areas under and around shade trees. We formulated our Prograss lawn overseeding mix to remedy these difficulties. For our shade mix we chose 90 percent Shadow Chewings Fescue and 10 percent A-34 bluegrass. We see exceptional results when proper overseeding procedures are followed. Shadow makes *us* look good, too."

Mike Erb
Prograss Lawn Service
Field Representative and licensed applicator.

Shadow is a new variety of Chewings type fine fescue developed for improved shade tolerance and resistance to powdery mildew. Breeding for these attributes was a long and tedious job, but the results were better, stronger turf than the old line fescues. Insist on the seed the pros choose for your shade mix.

SHADOW

"The hottest shade tolerant fine fescue under the sun"

Marketed by

TURF-SEED
Turf-Seed, Inc.

P.O. Box 250, Hubbard, OR 97032
503/981-9571 TWX **510-590-0957**

The **R**esearch, **P**roduction, **M**arketing **C**ompany

Circle No. 142 on Reader Inquiry Card

YTP JOB #4780

AUGUST 1986, VOLUME 25, NUMBER 8

WEEDS TREES & TURF

The Magazine of Landscape and Golf Course Management Since 1962

18

48

18 LANDSCAPE MANAGEMENT ON A LARGE SCALE
Disneyland's 76 acres provide daily challenges for a landscape management crew of 45.

24 A FERTILIZATION GUIDE
WT&T's annual report on turf, tree, and ornamental fertilization by Richard Rathjens and Roger Funk of Davey Tree.

40 ALTERNATIVE TURFGRASSES
All turf can't be Kentucky bluegrass especially in areas with little rainfall. A look at some grasses that provide a choice.

48 IDYLLIC INVERNESS
Host of this year's PGA Championship, Toledo's Inverness Club is maintained with a 'light and frequent' management program.

DEPARTMENTS

6 TRENDS
8 GREEN INDUSTRY NEWS
14 SHORTCUTS
54 JOBTALK
60 PRODUCTS
70 CLASSIFIED
74 EVENTS
76 OUTLOOK

Cover courtesy of Walt Disney Productions.

WEEDS TREES & TURF (ISSN 0043-1753) is published monthly by Harcourt Brace Jovanovich Publications. Corporate and Editorial offices: 7500 Old Oak Boulevard, Cleveland, Ohio 44130. Advertising Offices: 7500 Old Oak Boulevard, Cleveland, Ohio 44130, 111 East Wacker Drive, Chicago, Illinois 60601 and 455 East Paces, Ferry Road, Suite 324, Atlanta, Georgia 30305. Accounting, Advertising Production and Circulation offices: 1 East First Street, Duluth, Minnesota 55802. Subscription rates: $25 per year in the United States: $35 per year in Canada. All other countries: $70 per year. Single copies (pre-paid only): $2.50 in the U.S.; $4.50 in Canada; elsewhere $8.00; add $3.00 for shipping and handling per order. Second class postage paid at Duluth, Minnesota 55806 and additional mailing offices. Copyright © 1986 by Harcourt Brace Jovanovich, Inc. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical including photocopy, recording, or any information storage and retrieval system, without permission in writing from the publisher.

POSTMASTER: Send address changes to WEEDS TREES & TURF, P.O. Box 6198, Duluth, Minnesota 55806-9898. HBJ A HARCOURT BRACE JOVANOVICH PUBLICATION

The Premier Plastic Valve...

The PE Series Valves

When the specs call for the ultimate in performance and durability, call on Rain Bird's new PE Series valves.

These new 1", 1½" and 2" model valves offer the strength and security of brass at the price of plastic. Made of heavy-duty, corrosion-resistant plastic, the PE Series features low pressure loss design and an industry-high operating pressure rating of 200 psi.

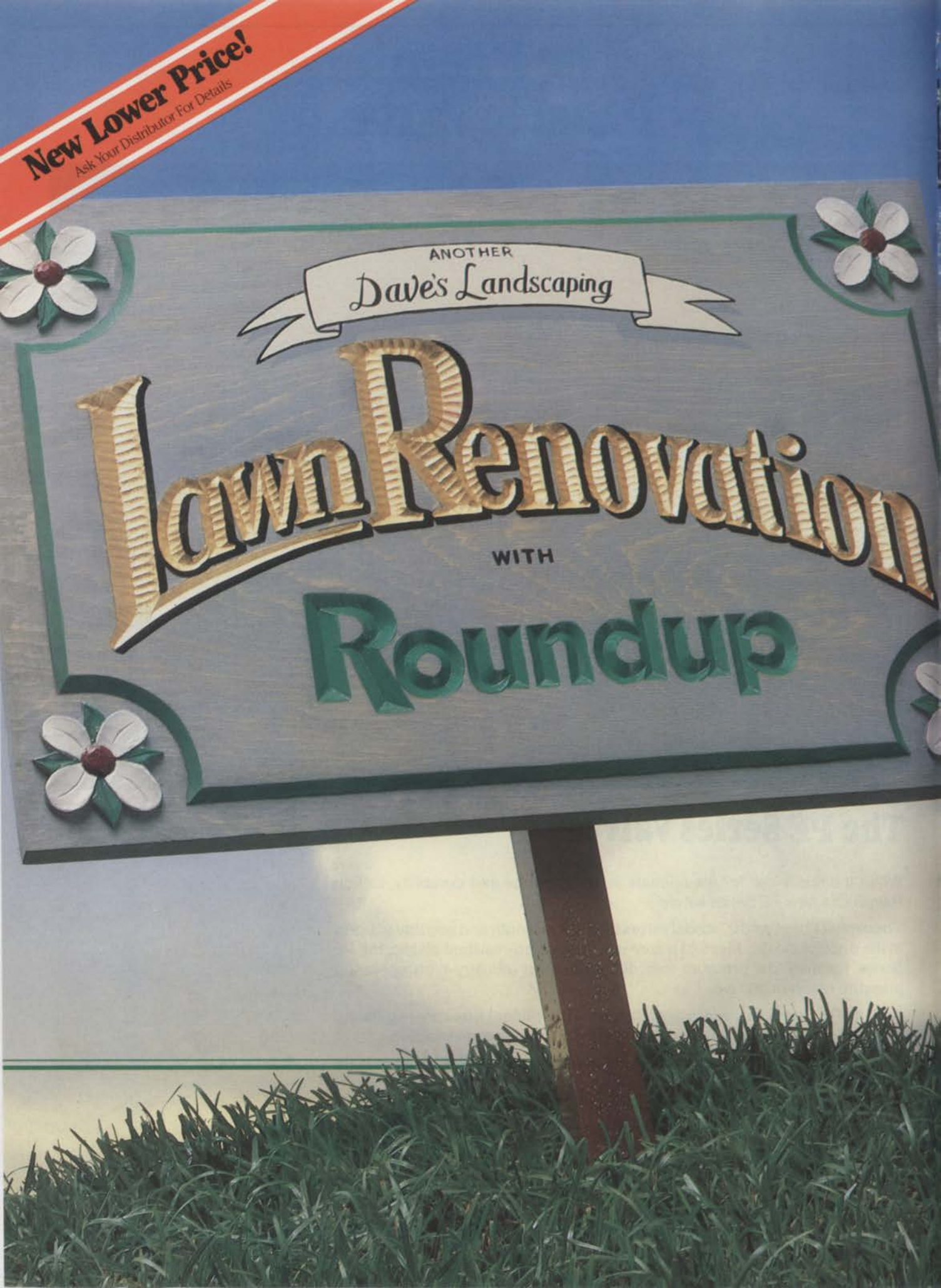
And, all PE Series valves are available with an optional pressure-regulating module for energy efficient operation and uniform water distribution.

From Rain Bird, the premier name in brass valves, comes plastic valves to be proud of—the PE Series.

RAIN BIRD®

For more information write:
Rain Bird Sales, Inc., Turf Division, 145 N. Grand Ave., Glendora, CA 91740

Circle No. 137 on Reader Inquiry Card


New Lower Price!
Ask Your Distributor For Details
ANOTHER
Dave's Landscaping
Lawn Renovation
WITH
Roundup

THE SIGN OF A GROWING BUSINESS.

WHEN YOU RENOVATE WITH ROUNDUP®, YOU CAN GET BETTER RESULTS, MORE SATISFIED CUSTOMERS, MORE BUSINESS.

Look at it this way; if you can deliver a service that will make a lawn go from spotty to spectacular every time out, you can't help but add to your business. Your work will speak for itself.

With a renovation using Roundup® herbicide, you *can* deliver that quality of service. Because nothing prepares the ground better. Roundup gets rid of old turf, weeds and all, roots and all—so it won't grow back. That helps the new lawn get off to the cleanest, best start possible. The result: a lush, dense, weed-free lawn.

What's more, Roundup is environmentally sound. It's biodegradable and essentially non-toxic to people, pets and wildlife. It won't wash or leach in the soil. So you can spray over root zones of desirable vegetation.

FIRST-CLASS RESULTS ARE AS EASY AS ONE-TWO-THREE.

One: Spray unwanted areas with a 2% solution of Roundup. Wait 7 days for old turf and weeds to die.
Two: Prepare for reseeding. Dethatch, if necessary, then core, vertical mow or spike to assure good seed-to-soil contact. Level and rake.
Three: Re-seed and water.

When that weed-free, healthy new turf comes up, your customers and all their neighbors will see the difference Roundup can make. You can see a difference, too—on your bottom line. Because higher quality renovations can command higher fees.

Better lawns, more satisfied customers, more referrals, bigger profits; any way you look at it, renovating with Roundup is the sure sign of a smart businessman.

FOR YOUR FREE LAWN RENOVATION GUIDE WITH ROUNDUP, CALL TOLL-FREE
1-800-225-1212 ext. 259
IN NE CALL 1-800-343-4300 ext. 259.

ALWAYS READ AND FOLLOW THE LABEL FOR ROUNDUP HERBICIDE.
Roundup® is a registered trademark of Monsanto Company.
© Monsanto Company 1986.
RNC-6-103D

Monsanto

Circle No. 128 on Reader Inquiry Card

1986 seed crop gets mixed reviews

■ The seed harvest is progressing with alacrity in the Wilamette Valley region of western Oregon, where 60 percent of the world's grass seed is grown, and also in western Washington, and northern Idaho. The bottom line on seed availability for late 1986 and early 1987: it's a guessing game until the crop is harvested and cleaned. After harvests are completed this month, seed availability (and price) should be more clear.

Here's a smattering of opinions from seed people about this year' crop:

Harry Stalford, International Seed: "The crop looks pretty good. If we get good weather the next three weeks (the last week of June and first two of July) we'll be in good shape."

Bill Rose, Turf-Seed: "The ryes are off in production due to a dry spring, perhaps 20 percent off. The tall fescues weren't hurt as bad, maybe 10 percent off. Bluegrass look like a good crop. The bentgrass looks excellent, as good as I've ever seen them. The fine fescues are drastically off, maybe 40 percent."

Mike McCarthy, E.F. Burlingham & Sons: "The fine fescues may be a short crop, the bluegrasses may be short, the ryes are yet to be seen, and the tall fescues look moderately good though some say it may be a little short."

Doyle Jacklin, Jacklin Seed (the company's seed is grown in Idaho, Oregon, and Washington): "The Kentucky blue proprietaries look good on irrigated land. The common Kentucky blue looks below normal because we've had some hot days south of here (Post Falls, Idaho). The perennial ryegrasses in the Wilamette Valley look excellent. Fine fescues look poor."

Jerry Pepin, Pickseed West: "We are fairly encouraged by the crop. The tall fescues look good—demand keeps going up. We should have at least an average crop of perennial rye. Overall, I think yields will be average, maybe better."

Pepin and Pickseed West have developed Bronco Kentucky bluegrass, for mixing with the turf type tall fescues. Bronco should be available by early September.

Report says pesticide market flat

■ The size of the $5 billion agricultural chemical market should remain constant through the end of the decade, according to "The U.S. Pesticide Industry in Transition," a news analysis prepared by Frost & Sullivan of New York.

The 273-page report notes virtually all planters who might use agricultural chemicals are already using them. Therefore, an increase in acreage would be necessary for increased usage. The report says there could be a reduction in acreage because of foreign demand reductions or supply increases, major breakthroughs in agricultural productivity, and further declines in American consumption of meat, which is a relatively expensive food in terms of planted acreage support required.

For more information, contact Frost & Sullivan Inc., 106 Fulton St., New York, NY 10038. (212) 233-1080.

WT&T Editorial Staff

Jerry Roche

Ken Kuhajda

Heide Aungst

WT&T

STAFF

Editor
Jerry Roche, Cleveland
Managing Editor
Ken Kuhajda, Cleveland
Associate Editor
Heide Aungst, Cleveland
Publisher
Dick Gore, Atlanta
Associate Publisher
Ron Kempner, Atlanta
Senior Vice President
Tom Greney, Chicago
Group Vice President
Robert Earley, Cleveland
Production Manager
Anne MacLean, Duluth
Production Supervisor
Marilyn MacDonald, Duluth
Graphic Design
Denise Johnson, Duluth
Graphic Coordinator
David Komitau, Cleveland
Circulation Supervisor
Gail Mantay, Duluth
Directory Coordinator
Michele Missinne, Duluth
Reader Service Manager
Gail Kessler, Duluth
Promotion Director
Linda Winick, Cleveland

OFFICES

ATLANTA
455 East Paces
Ferry Road Suite 324
Atlanta, GA 30305
(404) 233-1817

CLEVELAND
7500 Old Oak Boulevard
Cleveland, OH 44130
Editorial: (216) 243-8100

CHICAGO
11 East Wacker Drive
Chicago, IL 60601
(312) 938-2344

SEATTLE
1333 N.W. Norcross
Seattle, WA 98177
(206) 363-2864

DULUTH
120 West Second Street
Duluth, MN 55802
(218) 723-9200

MARKETING REPRESENTATIVES

Dick Gore
Atlanta (404) 233-1817
Ron Kempner
Atlanta (404) 233-1817
Jon Miducki
Cleveland (216) 243-8100
Robert Mierow
Seattle (206) 363-2864

HBJ HARCOURT BRACE JOVANOVICH PUBLICATIONS

Robert L. Edgell, Chairman; Richard Moeller, President; Lars Fladmark, Executive Vice President; Arland Hirman, Treasurer; Thomas Greney, Senior Vice President; Ezra Pincus, Senior Vice President; Joe Bilderbach, Vice President; James Gherna, Vice President; George Glenn, Vice President; Harry Ramaley, Vice President.

Frank J. McDonald, Director of Marketing
Cushman Division, Outboard Marine Corporation
Lincoln, Nebraska

CUSHMAN®

"Take the new 22-horsepower Cushman Front Line test-cut and we will send you a free solid brass belt buckle that proves our point."

Frank J. McDonald

Test-cut the improved Cushman Front Line, and you'll see why this mower is built to last.

There's no obligation, and you'll receive a free, limited edition, solid brass belt buckle.

Cushman engineers gave the Front Line a full 22-horsepower to get you through your tallest grass and toughest mowing conditions.

Engineered and built to last. That's why we stand behind the performance and durability of every Front Line mower with a 2-year warranty*

So save some of your toughest mowing for the Front Line, then call your Cushman Front Line dealer to arrange for your test-cut. But hurry, this offer ends August 31, 1986.

For more information on the Cushman Front Line write:

CUSHMAN
3245 Cushman, P.O. Box 82409, Lincoln, NE 68501. Or call toll-free: 1-800-228-4444
*Ask your dealer for details.

Your free gift with a Front Line test-cut.

"OUR REPUTATION IS BUILT TO LAST"

CFL6-8599R

©Outboard Marine Corporation, 1986. All rights reserved.

Circle No. 104 on Reader Inquiry Card

LAWN CARE

Lawn care media scare: the industry strikes back

In March, the magazine *Home Mechanix* ran an article entitled "The Lawn Care Scare," focusing on the problems with chemical lawn care services. The article raised a question of accuracy among lawn care professionals, who responded with their side of the issue.

For example, Bob Styduhar, environmental counsel for ChemLawn Services Corp. in Columbus, Ohio, wrote this: "The article 'The Lawn Care Scare' by Sherry Romeo is inaccurate in both tone and content. It specifically criticizes ChemLawn for not requiring its employees to wear protective clothing while spraying lawns. Such equipment is appropriate and required by law only when handling certain products in concentrated form but not for the dilute, water-based solutions used in spraying lawns...

"We also take issue with the statement in your article regarding the appropriate re-entry period after a lawn has been sprayed. Re-entry periods for products appear on product labels. A few products used by ChemLawn carry a label recommendation to keep off the lawn until the dilute material dries. It is our experince that materials dry within 30 minutes to two hours after application, depending upon temperature and humidity..."

Jim Brooks, executive vice president of the Professional Lawn Care Association of America, wrote this: "Why attack professional lawn care services when we're among the leaders in environmental protection? Members strongly advocate safety, adherence to manufacturer's recommendations, and observance of state and U.S. Environmental Protection Agency regulations. Why say there are no controls? Professionals are so well-trained and closely regulated that we are the ideal way for homeowners to avoid problems...

The March "Home Mechanix" cover.

"The record shows that through years of careful service, PLCAA members and other lawn care professionals have earned the trust of approximately 8 million residential customers, and about 1.5 million more join every year for the service. Why did you spotlight the risks without saying professionals recognize the risks and weigh those risks realistically? Authoritative health and regulatory officials say there's no threat to humans, pets or the environment from the general use of chemicals that professionals apply to lawns in diluted amounts. After all, these are the same chemicals homeowners are allowed to buy and apply themselves without supervision...

"Finally, why did you advise readers to learn more about lawn chemicals mainly from activist groups? You could have referred them to their state university extension service, their state pesticide regulatory agency, the federal EPA in Washington D.C., or their regional EPA office and the PLCAA."

Barry Eldridge of Spring Valley, N.Y. wrote: ..."Some of the information presented was irrelevant and, in one instance, redundant. Neither Abate nor Vapona (or DDVP) is a lawn care chemical. With respect to the relationship of 2,4-D to Agent Orange, I offer this analogy. Two products that share a common ingredient do not necessarily share the same properties: sodium is a component of table salt *and* of the pesticide sodium arsenate. Finally, on contamination of ground water by nitrates, the author failed to link the problem to the application of fertilizer rather than to pesticides."

Dr. Bruce Clark of Rutgers University (left center, with glasses) explains coating seeds with fungicide to turf managers at Lofts Field Day.

TURFSEED

Agronomist suggests using coated seeds in hot weather

Turfseeds coated with a fungicide will generally not contract pythium blight, even if planted during the hottest part of the year, according to Dr. Bruce Clarke of Rutgers University.

"When establishing seed in the summer, a fungicide treatment on the seed at a very low rate will help prevent damping off in the seed stage and will prevent pythium after the seed emerges," Clarke said at the 10th annual Lofts Field Day this summer.

Apron is the only fungicide that should be used to treat turfseed.

"Apron is a powder," Clark noted. "You put it on dry to the seed and it adheres. Apron will give two to three weeks protection against pythium."

However, Clarke said, "cool, dry weather is the best fungicide."

WEEDS

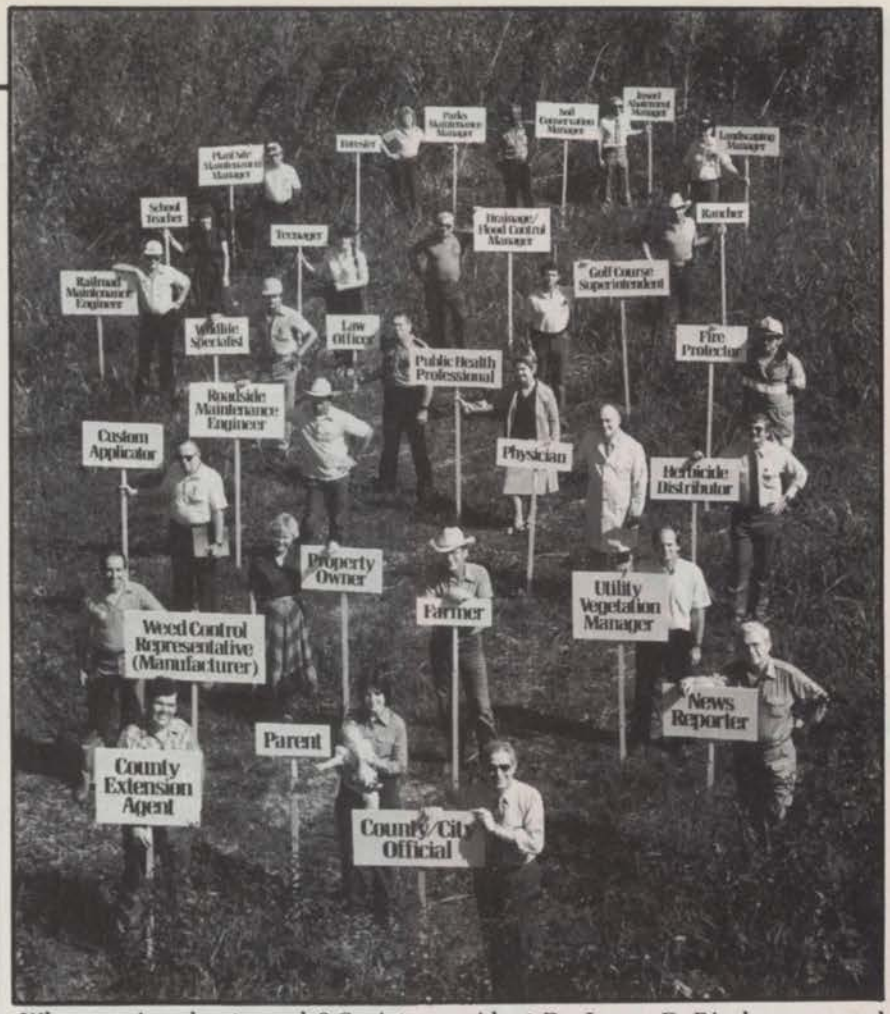
Weeds affect everyone, says weed group

Most people think of weeds as nothing more than a slight bother when they tarnish a lawn. But members of the Weed Science Society of America say weeds have an economic impact on everyone.

"What we do and recommend and use for weed control will be determined by regulations which are prepared by people who do not understand the materials now being used—nor farmer needs, nor the contribution of weed science to food production," said Dr. S.N. Fertig, staff chief of the USDA-ARS pesticide impact assessment staff.

Weed control in agriculture can return $3 to $5 dollars to the farmer for each dollar spent. But the recent farm crisis has made only a small dent in the multi-billion dollar business of marketing weed killers, since the chemicals are also an important part of the Green Industry.

It's estimated that 25,000 people from 60 countries worldwide work in research and development of weed control products. In the U.S., about 2,000 researchers work for universities and government, and 10,000 are extension service specialists, advisors or custom applicators. Another 50,000 are in industrial and government maintenance or are foresters.



Who worries about weeds? Society president Dr. James D. Riggleman posed that question during the 26th annual Weed Science Society of America meeting in Houston. His slide, above, shows 28 non-scientist weed worriers standing amid a patch of "Texas-scale" weeds to symbolize the weed concerns of the average person in a typical community like Houston.

CONFERENCES

Landscape Expo moves to Chicago-land area in 1987

The Landscape Exposition will move to O'Hare Exposition Center in Rosemont, Ill. for its second year in 1987. More than 16,000 professional landscapers, representing 15 percent of the total industry, are located within 300 miles of the Center.

"The Landscape Expo is the only show covering the entire spectrum of suppliers," says show manager Dawn Pratt, "so we anticipate high attendance from this regional concentration, as well as at the national level."

One of the national organizations to endorse the Landscape Expo is the Professional Grounds Management Society.

"We believe the three-day conference program will give our members increased educational opportunities," says PGMS executive director Allan Shulder. "The Landscape Expo is a very worthwhile endeavor for keeping the industry informed, and we look forward to a large turnout."

Last year's show and conference, held in Valley Forge, Pa., attracted more than 5,000 landscape professionals during its three-day run.

The Landscape Expo, co-sponsored by WEEDS TREES & TURF and LAWN CARE INDUSTRY magazines, will be held March 3-5, 1987. For information on attending or exhibiting, contact HBJ Expositions & Conferences, P.O. Box 5555, Norwalk, CT, 06854; (800) 243-2815.

REFERENCE

Michigan State offers turfgrass videotapes

A series of videotapes on turf tips for lawn care companies has been developed by Michigan State University and the Michigan Turfgrass Foundation.

The titles are: "Lawn Establishment" (14 minutes), "General Lawn Care" (26 minutes), "Lawn Grasses" (16 minutes), "Lawn Fertilization" (16 minutes), "Lawn Weed Control" (17 minutes) and "Lawn Maintenance Equipment" (19 minutes).

The tapes can be purchased in either VHS, ½-inch Beta or ¾-inch broadcast quality format. Prices for MTF members are $35 per tape or $175 per set of six. For non-members, prices are $60 and $300, respectively. Broadcast quality tapes are available at $80 each or $400 per set.

For more information, or to order tapes, write the Michigan Turfgrass Foundation, Box 275, Okemos, MI, 48864, or call Kathy at (517) 355-0270.

HOFFCO MADE THEM FIRST

First to brand name monofilament trimmers for Weedeater, Wards, McCulloch, Lombard, Garden Way, Echo, Green Machine, etc.

WE REMAIN FIRST · EVEN TODAY!

Years of experience and engineering expertise (since 1949) have developed a Hoffco line of monofilament trimmers and trimmer/cutters (bladed models) that work for everyone!

From the weekend gardener to the everyday commercial-user . . . Hoffco has nine models. You are sure to find the one that is just right for your job application.

Ask for a Hoffco trimmer . . . Pick it up . . . FEEL the balance . . . the COMFORT.

Look for these NEW design features:

- Adjustable Zig-Zag Handlebar with Foam Anti-Vibration Handle Grip for Operator Comfort
- Hoffco's Shock Absorbing patented Drive Shaft System
- Carburetor with "Peep Window" for easy fuel measurement and Foolproof Starting
- Spark Plug Protector that doubles as a storage hanger.

You get ALL you need from HOFFCO . . . Backpack or Hand Held Blowers, One-Man and Two-Man Post Hole Drills.

We fill all your needs.

Remember . . . we were and are FIRST . . . HOFFCO the only name you need to remember.

HOFFCO INC.
358 N.W. "F" St. • Richmond, IN 47374

HOFFCO

Circle No. 114 on Reader Inquiry Card

RESEARCH

Do lawn chemicals contaminate our water?

Not much concrete evidence exists for blaming lawn care chemicals for water contamination. Penn State professor of turfgrass science Thomas Watschke is studying claims which link associate nutrients and pesticides applied to lawns with the decline of water quality.

"There is very little literature about lawns. Most data are from pasture hydrology studies. Yet a pasture is not comparable to a lawn," Watschke explains. "A lawn does not suffer the same degree of compaction or severe defoliation from grazing activity. The closest we come to that is using a lawn mower with a grass catcher."

The study has shown that differences in turf establishment methods affect runoff. Sodded plots have 15 times less runoff than seeded plots four months after establishment.

The data shows that 1,300 sq. ft. of sodded, sloped lawn, thick and green without soil patches showing through, will give off approximately ½-gallon per minute runoff during a peak rainfall.

On less dense, unattractive grass with bare areas separating clumps, up to 7½-gallons per minute can escape during the peak.

"It appears that plant density and thatch contribute significantly to decreased runoff," Watschke says. The thicker the turf, the better its ability to decrease water movement and the greater its ability to remove nutrients and pesticides which have been applied.

Herbicides were applied to the test lawns last fall. Runoff water has been collected regularly and is currently frozen until it can be analyzed by the University's Pesticide Research Lab.

Watschke says the next step will be to add commercially-available pesticides and nutrients to study their effects. "This will finally put the cart before the horse," he says. "It will tell us what we don't know about what has already happened and is happening."

LEGISLATION

Federal government coming down hard on pesticide use

The EPA and the Government Accounting Office are trying to make it more difficult for commercial pesticide applicators to do business.

A proposed amendment to the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), is being re-

vised in the House Agriculture Committee. It would require licensing for all non-certified pesticide applicators. But it's an amendment that pro-pesticide groups have sought.

"Unless we upgrade with training, we are going to be so vulnerable (to lawsuits)," notes Dave Dietz, program director of the Pesticide Public Policy Foundation.

The GAO, meanwhile, is not happy with the EPA's enforcement of FIFRA. It has issued a 50-page report questioning the safety of non-agricultural pesticides. The report also recommends:

- mandatory pre-notification for pesticide applications in public places;
- warning labels on pesticides that have not met the latest registration standards; and
- government involvement in enforcing pre-notification where it is required.

The GAO report was submitted to the Subcommittee on Toxic Substances and Environmental Oversight, Committee on Environment and Public Works, U.S. Senate.

"This report is going to be used against us for years and years," says Dietz, who has recently had to field questions on national television ("20/20" and "The Today Show").

STATISTICS

Lawn care industry exceeds $2 billion

U.S. revenues of the lawn care industry reached $2.035 billion in 1985, increasing more than 16 percent from 1984, according to a survey by C.H. Kline & Co.

The Kline report noted that rapid growth within the industry is probably attributable to:

- successful adaptation of turf cultivation and maintenance techniques from agricultural and other professional sectors to residential and commercial markets;
- implementation of a consumer-service marketing approach;
- a relatively inexpensive, time-saving and professional method of caring for lawns; and
- widespread industry expansion through start-ups and territorial expansion of existing LCOs.

The report continues: "the chemical lawn care industry will continue to grow at a strong rate through 1990, although annual increases will be slightly lower than current performance. Assuming an annual inflation rate of 5 percent, sales are projected at $3.9 billion by 1990."

The Kline analysis is one part of a five-chapter report entitled "Strategic Opportunities in Chemical Service Businesses." For more information, contact the company by writing 330 Passaic Avenue, Fairfield, NJ, 07006, or by phoning (201) 227-6262.

SEMINAR

Monsanto aids aerial applicators

Monsanto has donated $25,000 toward a training program for proper application of aerial pesticides in forests and rights-of way sites. The seminar is tentatively scheduled for February in Indianapolis.

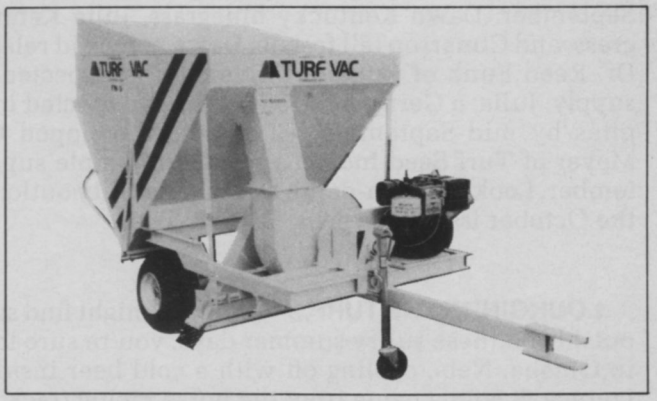
Monsanto will also contribute $1 for every gallon of Roundup and Rodeo herbicides purchased and applied via aerial application in forests and rights-of-way during 1986. The funds will be used to develop a training manual and seminar.

The Aerial Rights-of-Way Applicators Association and Purdue

TURF VAC® sweeps both turf and pavement

The only sweepers with unique all-vacuum design that operate on both turf or pavement, wet or dry. Safe, powerful air picks up bottles, cans, as well as fine clippings to reduce thatch build-up.

- Sweeping widths from 4′ to 30′.
- 6″ × 10′ hand intake hose available.
- Hard surface filtration.
- No fingers or brushes to wear out—picks up by air only.
- Ground dump & power lift dump.
- Tow type or self-propelled.
- PTO models available.



MODEL FM-3. With 4 ft. sweeping width and 11 HP B&S engine. Ideal for landscaping maintenance and other general purpose sweeping.

MODEL 80
Sweeps 48″ wide

MODEL 70 LD
Sweeps 54″ wide

MODEL FM-5
Lifts to Dump 96″

Write for brochures/distributor in your area.

TURF VAC CORPORATION
P.O. Box 90129, Long Beach, CA 90809
Telephone: (213) 426-9376

Circle No. 144 on Reader Inquiry Card

SHORTCUTS

SOUTH OF THE BORDER... Jim Mello of Nice 'N Green Lawn Care in Romeoville, Ill., is installing three polo fields in Queretaro, Mexico, 110 miles northwest of Mexico City. He is using turf-type tall fescue on the fields, which measure 10 acres. To put things in perspective, that's roughly nine times the size of a football field. When construction is completed, Mello will have installed seven polo fields, including four in the United States. He's used turf-type tall fescue on all fields.

MORE ON TALL FESCUES... Why turf-type tall fescues for good-looking turf? One reason, pointed out by Dr. Thomas Turner of the University of Maryland at the annual Lofts Seed Field Day, is because of the pesticide controversy. "We strongly believe we can reduce pesticide use by 50 to 75 percent with turf-type tall fescue," says Turner. "It's especially useful on sports fields. You get better footing and more rapid establishment with the turf-type tall fescues. Dr. Jack Murray at the USDA in Beltsville (Md.) is even experimenting with mixing turf-type tall fescue with zoysiagrass for sports fields."

NOT SAFE ANYWHERE... At least on a golf course, you're not. During thunderstorm season, metal and tall trees are not the only things lightning strikes. Tom Walker, superintendent at Inverness Club in Toledo, Ohio, host of this year's PGA, reports that lightning hit a wide-open area of his course. The 11th fairway, 25 yards from the green, took a jolt back in May. The message here is to use good judgement during a thunderstorm.

LESCO OFFERS SEED... Lesco Inc. of Rocky River, Ohio, is offering three new proprietary turfgrass varieties beginning in September: Dawn Kentucky bluegrass, Julia Kentucky bluegrass, and Cimarron tall fescue. Dawn, a hybrid released under Dr. Reed Funk of Rutgers University, is expected in limited supply. Julia, a German introduction, is expected in good supplies by mid-September. Cimarron, developed by Dr. Bill Meyer of Turf Seed Inc., is expected in ample supply in September. Look for an in-depth seed availability outlook report in the October issue of WEEDS TREES & TURF.

LOUNGIN' IN THE TURF... While you might find some people outside on these sultry summer days, you're sure to find some in Omaha, Neb., cooling off with a cold beer inside the Turf Lounge. It got its name from the horse racing track nearby.

OPERATION EAGLE... OMC/Lincoln devised a unique method of selling the new Cushman Eagle utility vehicle to dealers at its national dealer conference in June. Just before the company asked for orders, OMC/Lincoln employees donned uniforms, Gen. George Patton (impersonator Will Jordan) addressed the group, and Operation Eagle, a plan to defeat the competition, began. The play-acting may have worked. Dealers ordered 350 Eagles for delivery sometime in the early fall. OMC/Lincoln aims to sell 2,100 Eagles by September, 1987.

University have launched the program in an effort to establish uniform guidelines for aerial application.

The program is designed to give the applicator knowledge of pesticides, equipment, and proper application techniques, along with preparing them for an intensive certification examination. Additionally, the program may help applicators obtain insurance at reasonable rates.

"Proper handling, mixing, and spraying of pesticides as well as equipment and proper application techniques are critically improtant in aerial spraying," says Dr. Harvey Holt, professor of forestry at Purdue. "The training manual and seminar will help to further the applicator's understanding of the products he applies and equipment he uses."

For more information on the program write: Aerial Right-of-Way Applicators Association, c/o Dorf & Stanton Communications, 111 Fifth Ave., New York, NY 10003.

PEOPLE

Environmental names director, VP

Environmental Industries elects **Richard A. Miller** to the Board of Directors. He is a tax attorney and accountant specializing in the area of taxation. **S. Gene Giannulli** is named vice president of operations. He joined the company in 1984.

Richard Miller

Gene Giannulli

Dr. Thomas P. Mog is appointed director of environmental programs and **David A. Whitworth** is named horticulturist for **The Davey Tree Expert Company.** Mog will be responsible for directing the use, storage, and disposal of pesticides.

Dr. Thomas Mog

David Whitworth

A new clay carrier for Balan just made the best value in crabgrass control even better. Clay particles improve spreadability and make application more uniform than limestone or corncob carriers. Clay also greatly reduces the dust inherent to other carriers. And increases equipment calibration accuracy.

With Balan you get superior preemergence crabgrass control for eight to ten weeks with a single application. Then you can overseed or perform other turf management jobs, without worry of reduced seed germination. If you want longer control, the Balan price allows you a second application.

Balan. The better spreader. Talk to your Elanco distributor soon. Or write:

Elanco Products Company
A Division of Eli Lilly and Company
Dept. E-455, Indianapolis, IN 46285, U.S.A.
Balan®—(benefin, Elanco Products Company)

Circle No. 108 on Reader Inquiry Card

New Balan® particle size. The better spreader for crabgrass control.

Ciba-Geigy, Ag Division, Box 18300, Greensboro, NC 27419 ©1986 Ciba-Geigy Corporation

Think like a bug.

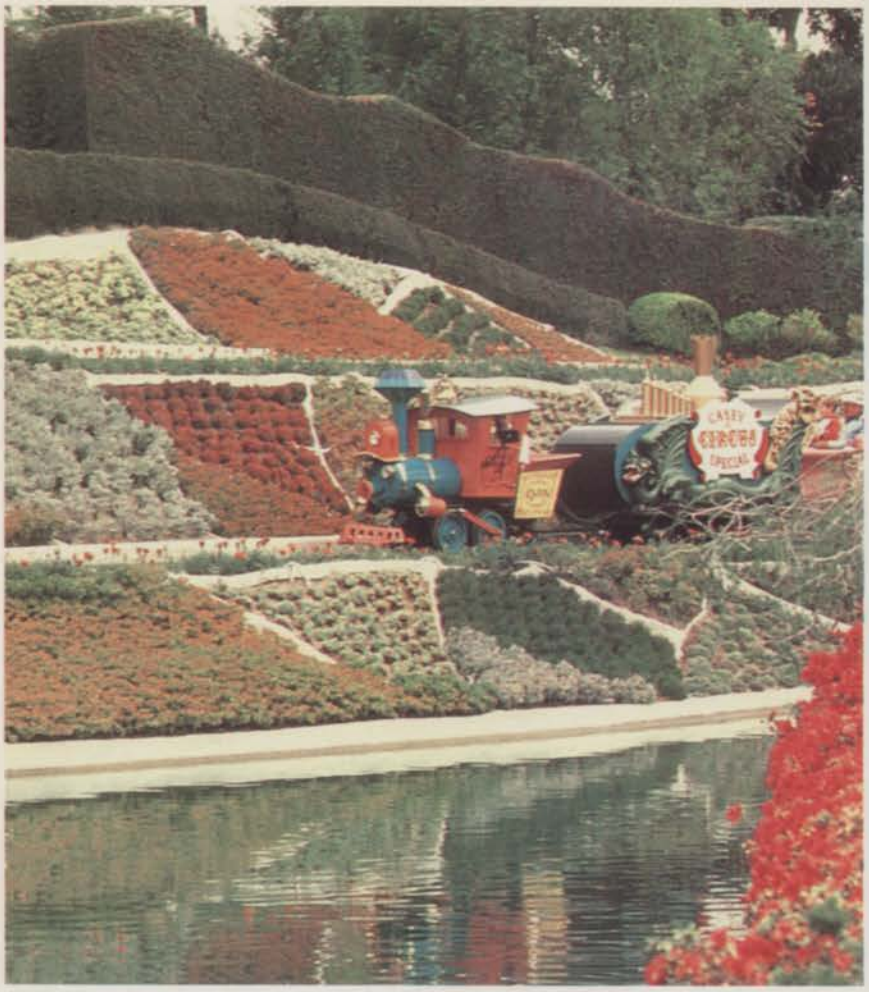
We've learned a lot about turf and ornamental insects since we invented Diazinon over twenty years ago. We know every move they make. Above ground and below. Chinch bugs, sod webworms, armyworms, aphids and fleas. Sub-soil pests like grubs and cutworms. Diazinon goes where they go. Easily penetrating thatch for a quicker kill and long-lasting residual control.

Diazinon outsmarts 52 different pests. Yet it's easy to use, and it's non-restricted. No special clothing or equipment are necessary. You can spray Diazinon near homes, hospitals or schools. In liquid, granular or powder formulations. Mixed with fertilizers or fungicides. All of which makes Diazinon the smartest move you can make.

DIAZINON.

The bug stops here.

Circle No. 102 on Reader Inquiry Card



Disneyland®

LARGE SCALE LANDSCAPE MANAGEMENT

At Disneyland, there are 76 developed acres, 15 turf varieties, a million annuals, 2,500 trees, 800 plant species, 25 miles of irrigation pipe, and 42,000 sprinkler heads. It takes 45 employees year-round to do the job.

by Heide Aungst, associate editor

"All the world is a stage..."

Shakespeare wrote those words. Walt Disney believed them.

Disneyland in Anaheim, Calif., doesn't have employees. It has "Cast Members."

There aren't any customers, just guests.

And the stage isn't a raised platform in front of an audience. It's 76 acres of green turf, towering trees, and breathtaking floral displays.

The star of the show is landscape superintendent Ken Inouye, a Disney-type character himself. Inouye has the wisdom of *Snow White's* Doc and the smoothness of *Cinderella's* Prince Charming. He can oversee a landscape with the creative eye of Gepetto, *Pinocchio's* creator.

Of course, he has help. Disneyland's landscaping department employs 45 people, including supervisors, foremen, and an overwhelming 30 gardeners.

The crew performs an extensive amount of work during the year. For example, three pipefitters maintain an irrigation system with about 25 miles of pipes, 42,000 sprinkler heads, and 170 automatic clocks. The tree pruning crew of seven trims 2,500 trees a year, ranging from a 12-inch dwarf spruce to an 80-foot eucalyptus.

With 800 plant species represented from 40 nations, landscaping is indeed the key to Disneyland's setting.

Walt Disney had a goal when he built the theme park in 1955. "I don't want the public to see the world they live in while they're in the park," he's quoted as saying. "I want them to feel they're in another world."

'God of horticulture'

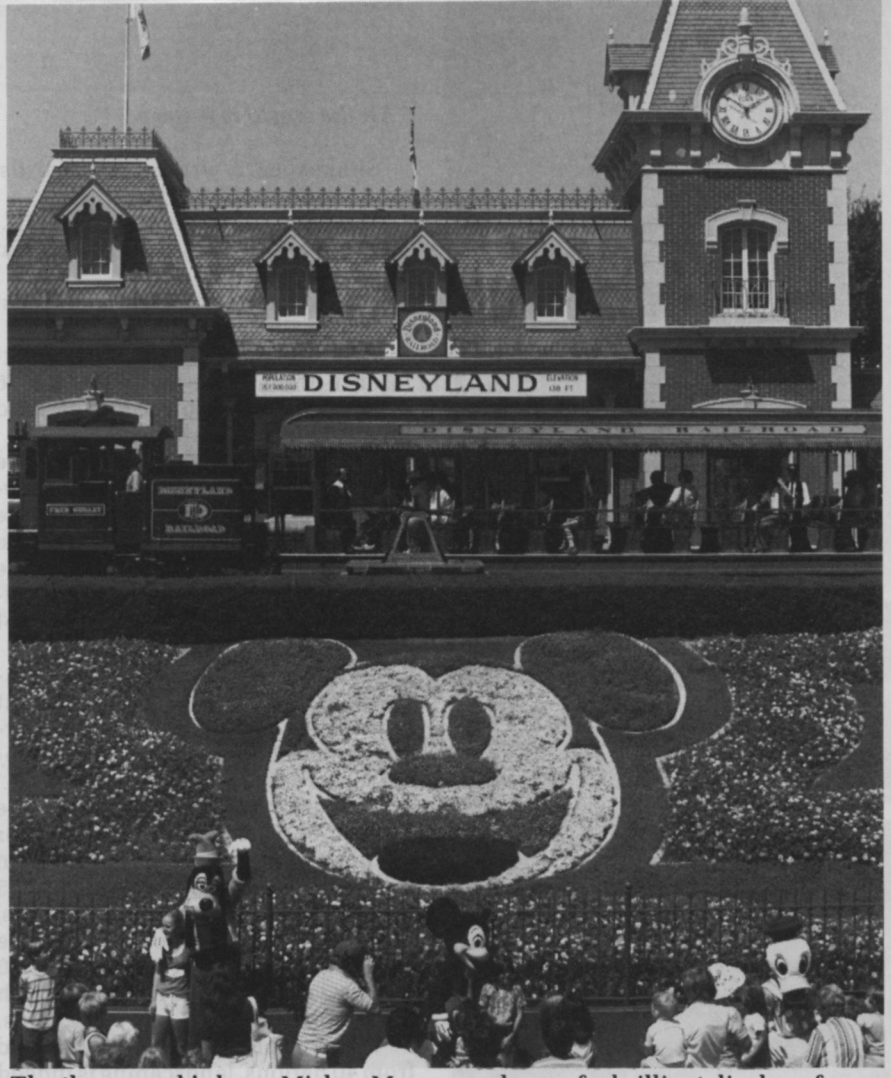
Disney left creative control to architectural designers Bill and Jack Evans. Inouye calls Bill Evans "the god of horticulture."

Evans, 74-years old, still works as a consultant to Disneyland. Inouye hopes to co-author a book on the park's horticulture with Evans.

Evans published the book *Disneyland World of Flowers* in 1965. Copies, stashed in a warehouse, were

Far left: The patchwork garden in Storybook Land boasts more than 25 varieties of plants.

Purple and yellow-orange annuals decorate the entrance to Tommorrowland.



The theme park's hero, Mickey Mouse, made up of a brilliant display of flowers, decorates Disneyland's entrance.

Phoenix reclinata palm trees, donated to Disneyland by Cecil B. DeMille, originally grew outside Space Mountain in Tomorrowland. Because of the remodeling of the ride, the palms are awaiting a new home.

eventually thrown out. Inouye's copy may be the only one remaining. Still, the plant varieties have changed so much in the last 30 years that an updated version is needed.

One change was an expansion from 10 turf varieties to 15, for what Inouye describes as "evolutionary reasons." Turf covers only about three acres at Disneyland. Railings surrounding the lawn areas made it possible to replace tough varieties designed for heavy traffic with more visually appealling turf.

"I give credit to the turf industry for developing the many varieties which cater to different needs," Inouye says.

Turf includes Santa Ana, Tifdwarf, and other varieties of bermudagrass; St. Augustinegrass; the bluegrasses Pennblue and Marathon; and fescues, including creeping red fescue.

The velvet-looking bright green grass outlining the entrance to Storybook Land is really a hardy zoysiagrass.

Where turf doesn't grow, there's sure to be one of about 10 varieties of groundcover.

Inouye uses few turf mixes because it lessens the impact. He approaches flower usage the same way.

"From a design aspect large quantities are more impressive than mixtures," Inouye explains. "When we put anything in for color, we plant a lot of them."

Ever-changing color

"A lot" is an understatement. The seven acres of flowerbeds hold 800,000 to a million annuals a year.

Inouye's agricultural background sneaks through when he refers to his "croplist" of annuals. About 60 percent of the flowers are ordered three months to two years ahead of time. All flowers aren't pre-ordered because of rotation of the beds.

Beds are replanted every three to four months. Usually healthy plants aren't replaced, although about 20 percent of the time flowers are changed regardless of their condition.

Soil is also changed every several years. Disneyland soil is a combination of sand, redwood sawdust, and nutrients.

Color plays a big role in landscaping Disneyland. The flowers bring animation to the landscaping, the way Disney himself brought it to the screen.

The entrance to Tomorrowland, for example, is 4,000 sq. ft. of blue and yellow flowers—pansies in the summer; ageratum and yellow marigolds in the winter.

One day Inouye decided to change the flowers to orange and yellow. "I

Penncross performs on Desert Isle

Famous 17th green, PGA West, LaQuinta, CA

Penncross not only survives, but thrives on all 18 greens at this innovative Pete Dye designed course.

You've seen this awesome 17th green in pictures, or maybe you've had the good fortune of playing this 147 yard challenge, but we're reasonably sure you didn't know that it's Penncross creeping bentgrass. Television announcers won't tell you and magazines don't print it, but the putting greens that have made more champions on some of the greatest courses in the world are Penncross.

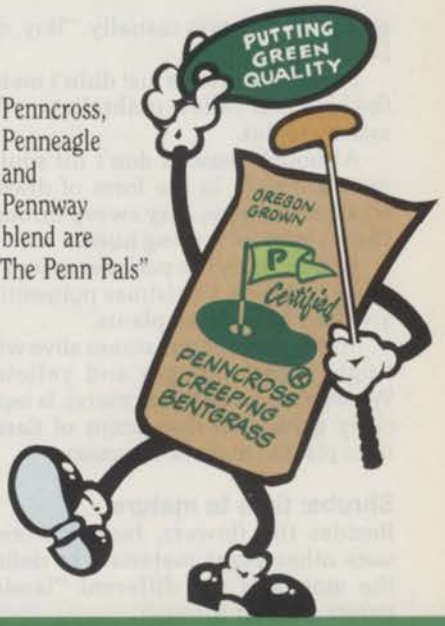
PGA West is a revolutionary new course with target greens, stadium spectator mounds and punishing hazards. Why would such an innovative designer use a strain of bentgrass that's been around for so many years?* We maintain that there is no better all-around bentgrass anywhere!

Some people say that bentgrass won't survive the intense sunbelt heat. We have evidence to disprove that notion. Penncross, and its Penn Pal, Penneagle have grown in popularity on courses from California to Florida . . . where bermudagrass used to reign.

Pete Dye specified Penncross for *this* desert isle, as he did for his famous Sawgrass island green in Ponte Vedra, Florida. Penncross is no ordinary putting green grass . . . and Pete Dye is no ordinary designer.

Watch Penncross perform in the *Skins Game* at PGA West, Nov. 29 and 30, 1986.

Penncross, Penneagle and Pennway blend are "The Penn Pals"



*Penncross is a tried and true cultivar developed by Professor Burt Musser at Penn State University and released in 1955.

Penncross is marketed by **TEE-2-GREEN CORP** / PO Box 250, Hubbard, OR 97032 / 1-800-547-0255 / TWX 510-590-0957

Circle No. 140 on Reader Inquiry Card

Disneyland's landscape superintendent Ken Inouye shows off a topiary hippo near the "It's A Small World" ride in Fantasyland.

got bored," he says casually. "Boy, did I hear about it!"

Seems the orange just didn't match the blue and yellow umbrellas on the nearby tables.

Although seasons don't hit southern California in the form of drastic weather changes, they sweep through Disneyland in varying hues.

Winter finds the park decorated in blues and reds. Christmas poinsettias are used as bedding plants.

Spring and summer comes alive with bright pinks, oranges and yellows. White, a color used year round, is especially evident in the dozens of Easter lilies planted to mark the season.

Shrubs: time to mature

Besides the flowers, Inouye's crew uses other plant materials to define the moods of the different "lands" guests wander through.

Tomorrowland's shrubs are pruned in futuristic geometric shapes.

Frontierland, sporting a rugged look, could pass as the backdrop of an old John Wayne flick. The drought-tolerant ornamental grass, pennecetum, at the entrance to Frontierland adds to the wild West look.

Few aren't charmed by the topiary animals found near the "It's A Small World" ride in Fantasyland. The shrubs, shaped into elephants, hippos and the like, take five to 15 years to develop.

The animals are made from a variety of shrubs such as junipers, including Armstrong and Sea Spray.

All in all, Disneyland has nine acres of shrub areas.

Fantasyland also boasts one of the two areas of the park which Inouye considers his biggest challenge. Storybook Land could be a horticulturist's nightmare, but to Inouye it's a dream.

Spectators take a boat ride through the mouth of a whale into the miniaturized land. The landscaping is designed on a one-tenth scale.

A three-inch weed on such a scale is magnified to look like a 10-foot giant against a three-inch house. "It's one of the higher maintenance areas," he says.

The dwarf albeta spruces in Storybook Land developed when their roots were confined by a glacier. Tree roots are kept confined in metal containers to slow foliar growth. The trees live about five years.

"Turf" in Storybook Land ranges from Irish moss to Korean grass. Patchwork gardens display about 25 plant varieties of different colors and textures. At a distance the gardens look like someone spread Grandma's homemade quilt on the river's bank.

Inouye's crew is also responsible for maintaining the river and the 17 million gallons of circulating water used on rides in the park.

"We use chemicals in the waterways, but nothing stronger than pool chlorine," Inouye explains. "We dye it to make it look dirty."

Inouye tries to avoid using any toxic plant materials or chemicals in the park. After all, children will stick anything in their little mouths.

Although Inouye has four full-time licensed pest control operators on staff, he tries to use cultural methods for controlling insects.

One way of doing this is by using plant varieties with a natural ability to combat pests. Regular pruning and keeping dead foliage off trees also helps prevent infestations.

When a problem does occur, often spraying a plant with untreated water will work just as well as chemicals.

Did you know?

Disneyland is not without its share of cocktail party trivia. Like, did you know that the Phoenix reclinata palm trees usually in front of Space Mountain (they're now awaiting a new home because of remodeling) once belonged to Cecil B. DeMille?

Or, that the wood preventing the beautiful *lepto spirma* tree from falling into the water surrounding Sleeping Beauty's Castle is from a Mexican ironwood, one of the few woods which won't deteriorate in water?

Or, that the "original" live Swiss Family Robinson tree is still growing only a few miles from Disneyland? (Rather than move the tree, they built a concrete ficus, but got the striatia going the wrong way in the process).

Well, Inouye confesses, working at Disneyland is bound to make even a landscape superintendent a great storyteller. **WT&T**

Photographs and "Disneyland" logo provided courtesy of Walt Disney Productions.

New CHIPCO® MOCAP® insecticide gives you the kind of grub control you need...control that's fast and effective.

CHIPCO MOCAP starts killing grubs as soon as you water it in. Other products take hours or days to work.

And all that time, grubs continue to feed, destroying your turf.

For best results, apply CHIPCO MOCAP before grubs start to feed—usually in August or early September. But if grubs get the jump on you, you can still take control quickly and effectively with fast-acting CHIPCO MOCAP.

And fast action is just part of the story. CHIPCO MOCAP gives effective control of a broad spectrum of grubs.

CHIPCO MOCAP KILLS OTHER TURF INSECTS, TOO.

CHIPCO MOCAP knocks out a broad range of surface insects, including chinchbug and sod webworm. And if nematodes or mole crickets are destroying your turf, you can destroy them, too, with CHIPCO MOCAP.

For the fastest, most effective control of grubs and other turf pests, include CHIPCO MOCAP in your turfgrass management program. CHIPCO MOCAP from Rhône-Poulenc Inc., makers of CHIPCO® 26019 and CHIPCO® Ronstar,® is a new addition to the CHIPCO line of fine products for turfgrass protection.

For more information write to Rhône-Poulenc, CHIPCO Department, P.O. Box 125, Monmouth Junction, NJ 08852

RHÔNE POULENC

CHIPCO® MOCAP®

Rubs out grubs.

CHIPCO, RONSTAR and MOCAP are registered trademarks of Rhône-Poulenc.

Circle No. 138 on Reader Inquiry Card

1986 GUIDE TO:

TURF, TREE & ORNAMENTAL FERTILIZATION

by Richard Rathjens and Roger Funk, Ph.D., The Davey Co.

TURF FERTILIZATION

Frequently overlooked in determining a fertilizer program are nutrient influences on carbohydrate reserves, root growth and the plant's ability to tolerate disease and environmental stress.

Time of application

Good timing of fertilizer applications builds carbohydrate reserves and promotes root development. The response of warm-season and cool-season turfgrasses differs.

The major cool-season turfgrasses (bluegrass, perennial ryegrass, fescue, and bentgrass) initiate and develop root systems in the early spring and fall. Fall nitrogen applications will increase carbohydrate reserves and root growth. It also improves turf density by promoting greater rhizome and tiller growth.

In addition to regular fall fertilization (September-early October), a relatively new concept known as late fall or late-season fertilization is being included in many maintenance programs. Late fall fertilization is applied when shoot growth slows or around the time of the season's last regular mowing.

Nitrogen applied at this time aids the photosynthetic production of carbohydrates. These carbohydrates are stored for use the following growing season, providing earlier spring green-up and an energy source for turfgrasses to recuperate from stresses.

Another reason for late fall fertilization is to reduce the need for high amounts of spring-applied nitrogen. Too much spring fertilization can actually reduce carbohydrate reserves and root development by inciting rapid shoot growth. This is because growing shoots take priority over roots for carbohydrate use.

Both spring and summer fertilization is used to maintain the color and density produced by fall and late fall fertilization the previous year. Fertilization at these times should not produce succulent plant tissue which can increase the severity of turfgrass disease and reduce the plant's ability to withstand heat, drought, mowing or wear stress.

Potassium applications contribute to the plant's hardiness and help "temper" the stimulating effects of nitrogen applications.

In contrast, most root growth in warm season grasses—such as bermuda, zoysia, and St. Augustine—occurs in spring and summer. Fertilization during these periods stimulates root growth. However, only moderate early spring applications should be used in areas where warm-season grasses go dormant in winter.

The roots of bermudagrass and St. Augustinegrass die in the spring following green-up. Heavy fertilization in early spring may result in more stress during this critical survival period.

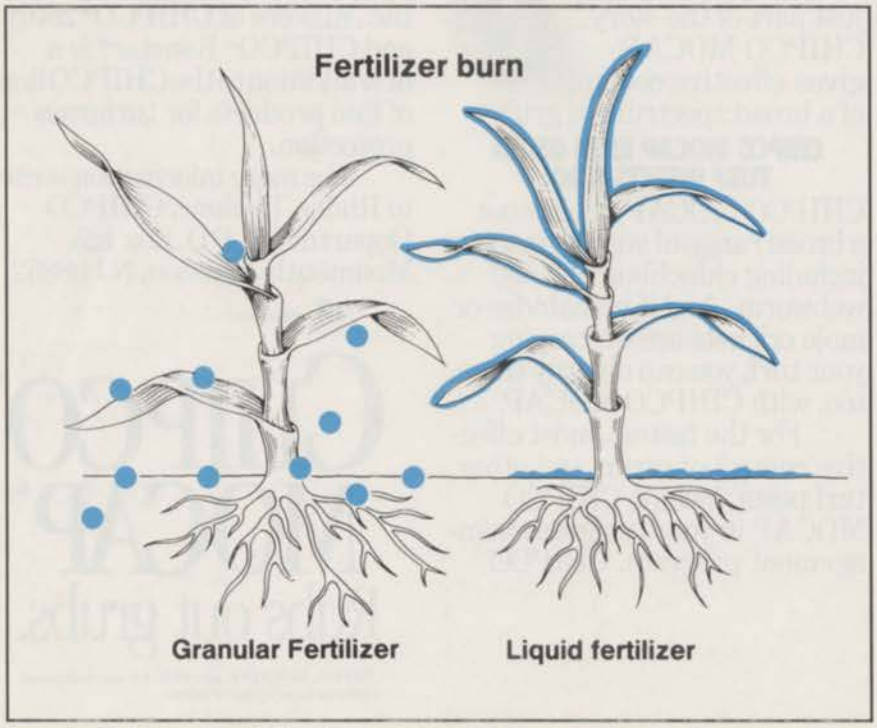
Like cool-season turfgrasses, warm-season grasses accumulate carbohydrate reserves in the fall when shoot growth slows. Care must be taken with the timing of fall fertilization since it may decrease low temperature hardiness if applied late.

Maintaining proper potassium levels in the fall will increase tolerance to low temperatures. As with cool-season turfgrasses, too much summer nitrogen fertilization can increase injury of warm-season grass subjected to stresses.

Maintaining adequate soil potassium levels will help warm-season

continued on page 28

Rathjens is senior agronomist and Funk vice president of technical and human resources for The Davey Co., Kent, Ohio.



Granular fertilizers may fall to the ground; liquids coat the plant, thus increasing burn.

"Nutriculture™ lets me fertilize all year without fear of burning"

Even in the hottest, driest weather, Dave Tooley knows he can rely on Nutriculture water-soluble fertilizer to help keep his greens and fairways in optimum condition, without fear of burning.

"Nutriculture is part of my weekly fertilizer program. We apply it in light amounts, with other chemicals. Nutriculture's tank compatibility with pesticides and herbicides makes application easier and saves me time...and because it's totally soluble, you have complete control over the release of nutrients. You know what's going to happen. My greens have the same healthy look from season start to season end."

Across the nation, golf course superintendents like Dave are discovering that a little Nutriculture goes a long way toward keeping their turf at its peak, all year 'round.

"Nutriculture is a high-concentrate fertilizer, so it doesn't take a lot to do the job," says Tooley. "It would take three bags of any other fertilizer to do the job of one bag of Nutriculture."

Total nutrient feed at each application...guaranteed analysis of primary N-P-K and trace elements...blue tracer dye... and much more. Without a fear of burning.

Nutriculture water-soluble fertilizer ...the total nutrient feed that lets you fertilize when your turf really needs it, not just when the weather permits. Make Nutriculture a part of your regular fertilizer program. For a FREE brochure write Plant Marvel Laboratories, 371 East 16th Street, Chicago Heights, IL 60411, Telephone 312-757-7500.

Circle No. 136 on Reader Inquiry Card

Plant Marvel

—Dave Tooley
Superintendent
Lakewood Golf Course
Lakewood, Colorado

FMC

What they need is an amine herbicide that gets tough broadleaves like an ester. No sweat.

Who wants to go back and re-treat for broadleaf holdouts like spurge, oxalis, chickweed or ground ivy?

Now there's an all-round amine herbicide that gets them the first time around. And at a cost you can afford as a base treatment.

Introducing WEEDONE® brand DPC AMINE herbicide.

It's gentle on turf, but with more weed-stopping power than most three-way mixes.

Safer near ornamentals

WEEDONE® brand DPC AMINE herbicide is a fifty-fifty mix of 2,4-D and dichlorprop. It's a non-volatile amine salt formulation that stays where you spray. WEEDONE® DPC AMINE gives effective weed control but without dicamba or MCPP–which can injure sensitive ornamental and turf grass species.

Spray any time

You can spray WEEDONE® brand DPC AMINE herbicide any time weeds are actively growing. Year-round.

And you can tank-mix with fertilizers for 'weed and feed' treatment.

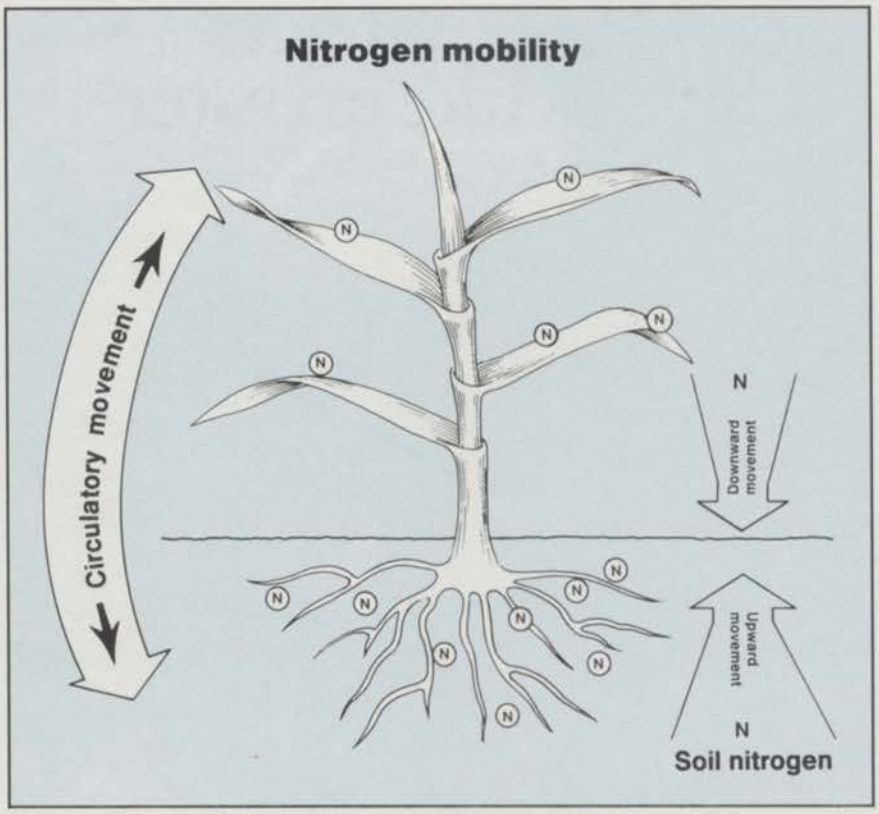
Have it both ways

A dependable, all-round amine herbicide with the spot control effectiveness of an ester. Ask your turf chemicals supplier about new WEEDONE® brand DPC AMINE broadleaf herbicide. It could make life easier for some people you know.

Circle No. 145 on Reader Inquiry Card

From the turf care group at Union Carbide

WEEDONE® is a registered trademark of Union Carbide Agricultural Products Company, Inc.
Copyright ©1986 Union Carbide Agricultural Products Company, Inc., P.O. Box 12014, T.W. Alexander Drive, Research Triangle Park, NC 27709
Always read and follow instructions on the label.



Circulatory movement: upward in the xylem, downward in the phloem.

turf's tolerance to heat, cold, mowing and wear stresses, and reduce susceptibility to turfgrass diseases.

Rate of fertilization

To determine annual nitrogen requirement (pounds per 1,000 sq. ft.), several factors should be considered: length of growing season, degree of quality desired, purpose for which the turf is used, and the species and cultivars present.

Growing season length (time between the last killing frost in the spring to the first in the fall) varies. Along the Gulf of Mexico and in certain areas of Arizona and California, it exceeds eight months. Portions of Maine and Minnesota, however, have as little as three and a half months. The longer the growing season's length, the more nitrogen is needed to maintain turfgrass quality.

The rate of fertilization can be tailored to meet different expectations in quality. A home lawn maintained for aesthetic purposes, for example, can range from a weed-free turf of acceptable color and density to a season-long turf of premium appearance.

The turf's purpose, whether for aesthetics or recreation, will also influence the nitrogen fertility level. The fertilization rate of bentgrass, for instance, can vary from four to 10 pounds of nitrogen per 1,000 sq. ft. Lower rates may be used for a pleasing appearance on a home lawn while higher rates can maximize a putting green's playability.

Research shows turf response is equal regardless of the method of (fertilizer) application with sources like urea.

Turfgrass species and cultivars can vary in amount of nitrogen needed for maximum quality. Sheeps, hard, and red fescues require a low level; Kentucky bluegrass a medium level; and bentgrass a high level of fertility. Improved cultivars of bermudagrass need more nitrogen than common bermuda.

Cultural practices like irrigation and clipping removal may require more nitrogen per year to keep the desired turfgrass quality. Supplemental watering will increase the rate at which nitrogen is leached from the root zone. Losses can be substantial when quick-release nitrogen sources are applied to sandy soils.

Clipping collection following mowing has been estimated to remove about 20 percent of the nitrogen applied to turfgrass. Using more nitrogen may be necessary to maintain quality when collecting clippings.

Phosphorus and potassium have been routinely applied along with nitrogen using fertilizer with ratios such as 3:1:2, 5:1:2 or 4:1:1. These ratios are based on the relative amounts of nitrogen, phosphorus, and potassium found in turfgrass clippings, but do not take into consideration the levels in the soil.

Their use should be based on a soil test. Many soils contain high levels of phosphorus and little, if any, response is obtained by applying more phosphorus.

Two factors to be considered in making individual nitrogen applications are source and time of year.

Quick-release nitrogen sources (for example, ammonium nitrate and urea) are commonly limited to no more than one pound of nitrogen per 1,000 sq. ft. This rule of thumb is followed in spring and fall to avoid excessive shoot growth. For this same reason, summer applications using quick-release sources are often limited to no more than one-half pound of nitrogen per 1,000 sq. ft. Lower rates of quick-release sources also minimize the possibility of fertilizer burn.

Method of application

Fertilizers can be applied in either dry or liquid forms. Research shows turf response is equal regardless of the method of application with nitrogen sources like urea. The application method then may be determined by the turf manager's perception of productivity and personal preference.

Two types of spreaders are used to apply granular (dry) fertilizers: gravity and centrifugal.

With the gravity (drop) spreader, fertilizer is held in a trough and agitated by a mixing bar connected to the wheels. The fertilizer is dropped through a series of slots to the turf below in defined swaths.

The centrifugal (broadcast) spreader is commonly used by commercial turf managers because it applies a wider swath of material and can treat large areas more quickly. It features a hopper with the fertilizer falling through a hole (or series of holes) onto a spinning disk which propels fertilizer ahead and to the

Now you can hang up your gloves in the fight against broadleaf weeds with LESCO Three-Way Selective Herbicide.

Deliver the knockout punch to more than 30 broadleaf weeds — including such tough champions as ground ivy and spurge — with the combined effectiveness of 2,4-D, MCPP and dicamba. You'll get quick-action, single-application control.

Available in five-gallon, 30-gallon and 55-gallon containers, LESCO Three-Way Selective Herbicide eliminates the inconvenience and inefficiency of tank mixing individual components. Bulk shipment by tanker truck or tote tank is also available in most areas.

Controlling broadleaf weeds doesn't have to be a fight. Order LESCO Three-Way Selective Herbicide today. Call toll free.

(800) 321-5325 NATIONWIDE **(800) 362-7413 IN OHIO**

LESCO

LESCO, Inc., 20005 Lake Road, Rocky River, Ohio 44116 (216) 333-9250

Circle No. 150 on Reader Inquiry Card

Genetic excellence yields top performance.

OMEGA II*

PERENNIAL RYEGRASS

* PVP 8400141

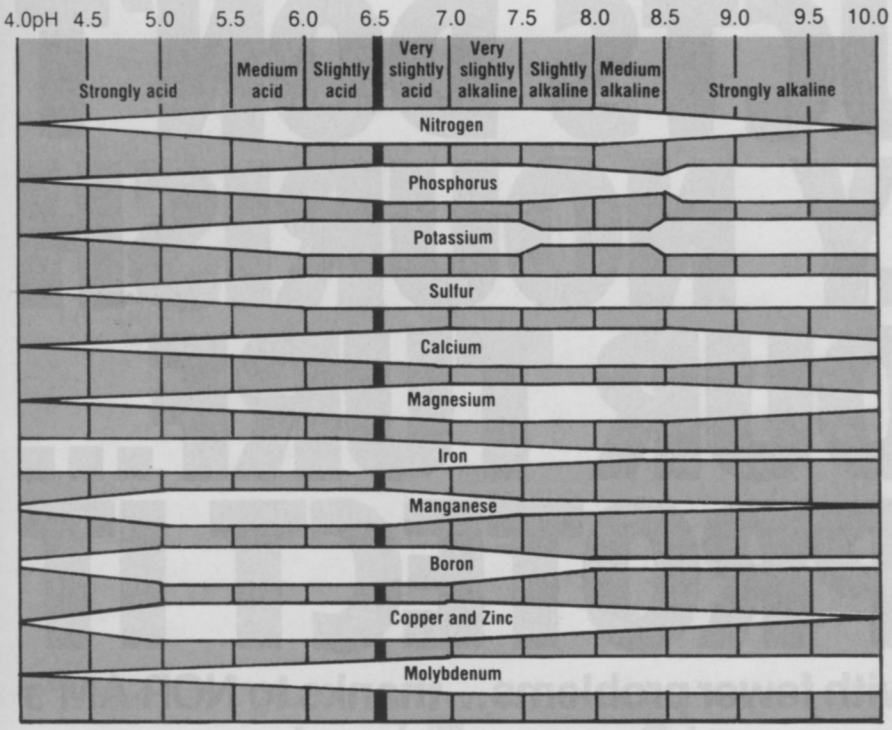
The researchers have done their job. The turf trial results are in. Omega II is number one. It received the highest quality rating in the 1984-85 National Overseeding Test directed by the USDA. Omega II was tested in ten different locations and won out over 53 other ryegrasses! And that's not all. Omega II has also been rated number one for cool season turf use in residential lawns, sports turf, tees and fairways. Because of its broad genetic heritage Omega II performs over widely varying conditions of light, temperature, moisture, soil types and maintenance. Its insect and disease resistance is outstanding!

For information and the distributor nearest you contact: ***Garfield Williamson, Inc.***
Jersey City, NJ 07306
201-435-3500

Circle No. 113 on Reader Inquiry Card

Maximum nutrient availability

Maximum availability is indicated by the widest part of the bar



sides of the spreader.

With a liquid application method, fertilizer is either solubilized or suspended in water and sprayed on the turf. The amount of water normally varies from one to five gallons per 1,000 sq. ft.

Spray equipment can be broadly classified into either low pressure spray booms or high pressure (hydraulic) sprayers. Both types feature a tank, pump, pressure regulator, strainers or screens, and nozzle(s).

Low-pressure spray booms, as the name implies, are operated at pressures in the range of 15-60 lbs. per sq. in. (psi) and deliver one gallon or less of spray per 1,000 sq. ft. They are designed to be driven over large areas delivering the spray from a series of nozzles in distinct swaths. They are often used on golf course fairways.

High-pressure sprayers can create several hundred pounds or more of pressure. They use a hose and hand-held nozzle for directed application, and are used by lawn care companies.

TREE AND SHRUB FERTILIZATION

Landscape trees and shrubs are often subject to adverse soil and environmental conditions. Compacted soils, poor drainage, restricted root areas, highway salts, air pollutants and competition from turfgrass contribute to plant stress, thus increasing the importance of regular fertilization.

Exact fertilizer needs are difficult to judge in interiorscape maintenance without measuring light at strategic locations.

Vigorous trees are more resistant to insects and disease, more attractive, and a greater asset to properties.

Only nitrogen, phosphorus and potassium are normally applied in tree fertilization. However, supplemental micronutrients such as iron and manganese may be necessary for certain species growing in alkaline or sandy soils.

Plants often respond to nitrogen applications with dramatic improvements in shoot growth and leaf color. Because nitrogen is transitory in soils and relatively large amounts are used by plants, soil analysis is not particularly useful. Heavy applications of nitrogen alone may stimulate shoot growth more than root growth, disturbing the natural root/shoot ratio.

The need for supplemental phosphorus and potassium is more difficult to determine since they do not produce a visible response except on young or newly-transplanted trees and shrubs.

Results from field studies also have been inconsistent because of differences in soil, age, condition and location of test species, and the timing and method of application. Where reliable soil tests are not available for phosphorus and potassium, most arborists use a complete fertilizer on all trees and shrubs.

Since arborists must be concerned with trees and shrubs in a wide variety of soil conditions, the most practical approach to fertilization is to provide an effective formulation for trees and shrubs in a geographic area.

Specific soil/plant deficiencies may be addressed, if necessary, on an individual basis. In most cases a 3:1:1 (or similar) ratio is satisfactory, but more potassium and/or micronutrients may be advisable in sandy or alkaline soils, particularly for ericaceous or other so called "acid-loving" plants.

Application rates

Most fertilizer recommendations are based on the size of the growing area for shrub beds or the branch spread for individual trees and shrubs.

Fertilizer recommendations based on trunk diameter can result in over-fertilization and plant damage if the root system is restricted by paved areas, foundation walls, or other obstructions.

Three pounds of actual nitrogen per 1,000 sq. ft. per year, or six pounds every other year, will keep deciduous trees and shrubs healthy and vigorous. If leaf color, annual growth or general vigor is unacceptable, six pounds of nitrogen per 1,000 sq. ft. may be applied annually.

Broadleaf evergreens, small shrubs, flowering trees and recently-transplanted or declining trees are more sensitive to fertilizer salts. These plants should receive only about one-half the recommended rate, particularly when quick-release fertilizers are applied. The risk of injury to sensitive plants may be reduced by splitting the recommended annual amount into two or more applications.

The amount of fertilizer per 1,000 sq. ft. of root area can be calculated by dividing the percent nitrogen on the fertilizer bag into the desired nitrogen

continued on page 34

NOR-AM's® TURF PRODUCTS DON'T SIMPLY NOURISH YOUR TURF... THEY PROTECT IT

Now achieve fine turf with fewer problems...thanks to NOR-AM's Total Turf Management Program. This unique program brings you a broad selection of high-performance products that assure healthier turf with better root development, fewer insect problems and less disease destruction.

As a service to the industry, NOR-AM has developed a Total Turf Management Program. This program includes a turf management calendar guide, brochures on turf diseases, insect control and fertilization techniques, in addition to timely turf management reports. To enroll in this helpful program, fill out the coupon below or contact your local NOR-AM sales representative.

MAIL COUPON TO:
NOR-AM Chemical Company
3509 Silverside Road
P.O. Box 7495
Wilmington, DE 19803
Attn: Communications Dept.

WWT

YES, I would like to be enrolled in NOR-AM's Total Turf Management Program. Please send me further information.

Company _____

Name _____

Title _____

Address _____

City _____ State _____ Zip _____

Nitroform®
Slow predictable release by soil bacteria provides constant 38% nitrogen when most needed for even, sustained growth. Nitroform reduces the risk of nitrate contamination, decreases thatch build-up, is nonburning and nonstreaking, resists leaching even in sandy soil, and assures better root development.

Turcam®
An advanced broad-spectrum carbamate insecticide that controls white grubs, chinch bugs, sod webworms, mole crickets and many other turf and ornamental pests. Turcam is odorless, works well in spray equipment, won't tie up in thatch, won't damage turf or ornamentals, and should be your product of choice when long residual control is required.

Proxol®
Economical Proxol 80SP Insecticide works fast on surface-feeding sod webworms, armyworms and cutworms, and readily penetrates thatch to control grubs. Proxol is easy to apply as a spray, has no unpleasant odor, and no long-term residual build-up in the soil.

Prograss®
A selective herbicide that effectively controls annual bluegrass, crabgrass and other troublesome weed species.

Acti-dione®
Broad-spectrum family of turf fungicides that provide four-season disease control. Acti-dione has proven to be effective without creating resistance problems.

Acti-dione TGF® can be tank-mixed with Bayleton® or Daconil® to complement or improve disease control with significant cost-per-acre savings.

Banol®
Specialized fungicide that controls pythium and phytophthora in turf and ornamental plants. Preventative control with Banol stops the spread of pythium by mowers, foot traffic and surface water; it also means fewer applications, lower rates and savings in labor, fuel and equipment.

IMPORTANT: Please remember always to read and follow carefully all label directions when applying any chemical.

NOR-AM
NOR-AM CHEMICAL COMPANY
3509 Silverside Road, P.O. Box 7495
Wilmington, DE 19803

Total Turf Care from the Turf Managers

Circle No. 130 on Reader Inquiry Card

Spray systems such as the one shown above are used to apply nutrients to turfgrass.

NITROGEN FERTILITY LEVELS

lbs./growing month/1,000 sq. ft.

HIGH .5-1.5	
Kentucky bluegrass	bermudagrass
creeping bentgrass	
MEDIUM .4-1.0	
zoysiagrass	colonial bentgrass
tall fescue	velvet bentgrass
perennial ryegrass	St. Augustinegrass
annual bluegrass	
LOW .2-.6	
carpetgrass	red fescue
chewings fescue	
VERY LOW .0-.4	
blue grama	bahiagrass
buffalograss	centipedegrass

per 1,000 sq. ft.

For example, to determine the amount of 30-10-10 fertilizer required to apply six pounds of nitrogen per 1,000 sq. ft., divide .30 into 6, which equals 20 pounds.

Application timing

Although the roots of woody plants may elongate during the growing season, active root growth most often occurs in early spring and late fall when soil temperatures are cool and leaves offer little competition for water and nutrients.

Fertilization is most effective when supplemental nutrients are available during periods of optimum root growth. Soluble nitrogen fertilizers, because of their short residual in soils, should be applied between October and December and/or between February and April. Controlled-release nitrogen ensures availability in the root zone for a relatively long period, depending upon the nitrogen source's solubility. The application timing of these fertilizers may not be a major concern.

Application techniques

Supplemental nutrients can be supplied to landscape plants through foliar sprays, trunk injections, or applications on or beneath the soil surface. Though each method has advantages in specific situations, woody plants in most cases respond best to soil applications.

Surface applications

Nitrogen fertilizers can be applied to the soil surface, since nitrates are highly mobile and will move downward into the root zone. When fertilizing woody plants in sodded areas, surface application should be limited to no more than three pounds of nitrogen per 1,000 sq. ft. from a controlled-release source. However, since turfgrasses in the application zone may be injured or respond with undesirable succulent growth, sub-surface applications are often used on trees and shrubs in quality lawns.

Fertilizer with phosphorus should not be applied to the soil surface. Phosphorus is bound to soil particles and does not move downward to contact the absorbing roots. Surface applications of phosphorus may also stimulate annual bluegrass, which is undesirable in home lawns.

Drill hole technique

Fertilizer can be placed in the root zone by dividing the recommended amount of fertilizer equally among drilled holes in the ground. For trees, holes should be 12 to 18 inches deep and 18 to 24 inches apart, beginning two to three feet from the trunk and going two to three feet beyond the drip line.

To prevent turfgrass injury, fertilizer should be at least four inches below the soil surface. Calcined clay, perlite, or other soil amendments can be used to fill the top of the hole or, in quality lawns, a plug of grass can be removed before drilling and replaced after adding fertilizer.

Soil injection

Liquid soil injection is a fast, economical alternative to the drill hole technique. A hydraulic sprayer operated at 150-200 psi and an injector probe inserted about 12 inches into the soil are needed. The injections are normally in a grid pattern about three feet apart within and slightly beyond the tree canopy.

Soil injection can mean more thorough nutrient distribution than the vertical hole technique, and generally can be done in about one-fourth the time.

Unfortunately, most soluble fertilizers have a high burn potential and soluble nitrogen may leach from the root zone. It may remain in the root zone for as little as six weeks.

Because of the limits of liquid soluble fertilizers, suspension fertilizers for soil injection are becoming popular. Ureaformaldehyde is particularly effective as a controlled-release nitrogen source in soil injection systems. Its release rate is not greatly affected by particle size. Suspended in water, powdered ureaformaldehyde can be injected into the soil by hydraulic pressure.

Two recent introductions, soluble methylol and methylene ureas, have a lower burn potential than urea or other soluble nitrogen sources.

Other methods

The aerofertil technique injects dry fertilizer by blasts of air into drilled holes in the soil. This method is similar to drill hole application, but provides additional aeration by breaking up heavy or compacted soils.

Fertilizer stakes or spikes are driven into the ground at intervals beneath the drip line of trees and shrubs.

Although they contain enough fertilizer, spikes are expensive and not as effective as other fertilization methods. One or two spikes per inch of trunk diameter provide only a small amount of fertilizer, not all of which comes in contact with the root system since there is little lateral distribution within the root

Scotts ProTurf

Dick, ProTurf already has a 15-0-30 High K fertilizer for fairways. Why did you feel you needed something for greens? "On greens, you want a fertilizer with a very small particle size. Much smaller than our fairway product designed for the big rotary spreaders."

Why does particle size make a difference? "The smaller particles disperse evenly from the spreader, filter down into the turf, and disappear when you water. There's less chance they'll affect a putt or stick to shoes and get tracked around."

That sounds good for the golfers. "Superintendents will like it, too. In addition to being small, each particle is homogeneous. So, even at half the regular application rate, there's no chance of getting the kind of speckling you might see if you used a coarse blend. And more particles per square inch produces a more desirable, uniform greening response."

Now tell me why High K will be good for my greens. "High potassium levels have been found to enhance turf performance, particularly under stress conditions—improving drought hardiness, resistance to disease, and wear tolerance. There's also evidence that high potassium reduces winter kill in bermudagrass."

Why is there so little nitrogen? "To prevent over-stimulating top growth. For example, High K Greens can be used at double rates to build potassium levels in sand greens and you'd still be applying only 1 pound of N per 1,000 square feet. Or you can use it at regular rates on any greens that are on a low nitrogen diet. It can also be used at any time of the year."

Anything else we should know about ProTurf High K? "If you like what it does for fairways, you'll love what it does for greens."

For more information on new High K Greens Fertilizer, call your ProTurf® Tech Rep. Or call Scotts® direct at 800-543-0006. In Ohio, call collect 513-644-2900.

Circle No. 149 on Reader Inquiry Card

"We developed this new version of 15-0-30 High K fertilizer especially for greens. And golfers."

Dick Westfall, Scotts Research project leader (Fertilizer R&D), talks about new **High K Greens Fertilizer.**

Annual Nitrogen Requirement of Turfgrasses*

Species	Length of Growing Season, Months	Nitrogen per Season lbs./ 1,000 sq. ft.	Variations in Management
Cool-Season:			
sheeps & hard fescue	4- 8	0- 3	low maintenance; roughs
red fescues	4- 8	1- 3	low maintenance to good care
Kentucky bluegrass	5-12	2- 8	lawns, fairways
bentgrasses	4- 8	1- 4	medium care, lawn, fairways
bentgrass, greens	5-12	6-15	clippings removed, forced growth
Warm-Season:			
zoysia	6-10	1- 6	adequate cover
common bermuda	7-12	2- 8	most variable
St. Augustine, bahia	10-12	2- 8	warm areas, lawns
bermudagrass, fairways and tees	5-12	4- 9	good management
bermudagrass, greens	8-12	8-20	may rest over winter

*Adapted from Turf Managers' Handbook by William H. Daniel and Raymond P. Freeborg, published in 1973 by Harvest Publishing Company, New York, N.Y.

zone of most soils.

Foliate sprays, trunk injections and implants can supply limited nutrients to woody plants. They are recommended for micronutrients whose availability is reduced by alkaline soils. These methods are most effective when a single micronutrient is deficient.

FERTILIZATION OF TREES AND SHRUBS IN CONTAINERS

Growing trees and shrubs in landscape containers is common where plants are desirable but suitable planting sites limited.

They need careful attention because the reservoir of available growing media—minerals and water—is much smaller. Container soils, often wet and poorly aerated, can leach excessively and and require a regular fertilization program.

In general, recommended fertilizer rates for landscape plants based on square footage have been successful in maintaining container-grown plants.

A complete fertilizer applied at an annual rate of 0.5 to 1.0 ounce of nitrogen per 10 sq. ft. of container soil surface is usually used. However, because of the wide selection in plant material and variations in container design and growing media, fertilizer needs are best determined by soil and tissue analysis.

Container plants can be fertilized by dry, foliar, and liquid application.

As with landscape plants, foliar applications are usually limited to micronutrients.

Foliar fertilization is effective where soil conditions may slow root absorption or where a quick response is needed. The spray should be contained, since some micronutrient sources can stain.

Dry fertilizers may be applied either in controlled release or quick-release form. High analysis fertilizers may be difficult to distribute evenly because of the small amount needed per container. Liquid applications of soluble or suspension fertilizers provide a uniform dosage and fast and easy distribution, but more frequent applications may be needed because they may leach from container soil.

FERTILIZING INTERIOR PLANTS

During production, the foliage plant growth is quickened by using high rates of nutrients. These same plants grown indoors, however, usually get less light, and neither need nor will tolerate the amount of fertilizer they received in production.

Exact fertilizer needs are difficult to judge in interiorscape maintenance without measuring light at strategic locations.

Light varies from one side of a room to another, often within a few feet. Usually, the stronger the light under which foliage plants are growing, the more nutrients are needed. Recommended annual fertilizer rates can vary from as low as 0.3 grams of nitrogen per square foot for low light intensities to 3.0 grams for high intensities.

A complete fertilizer with a nitrogen/phosphorus/potassium ratio (similar to those recommended for landscape plants) is suitable for indoor plants. The highest levels of nutrients should be applied at highest growth periods, for most plants, spring and summer, when natural light is strongest.

Micronutrients are seldom recommended but may be needed when growing sensitive plants in media other than soil. The rubber plant *(Ficus elastica)* and the Areca palm *(Chrysalidacarpus lutescens)* are both sensitive to boron deficiency.

In addition, the Areca palm can also become zinc deficient. However, over-applications of micronutrients can cause toxicity problems.

Nutrient levels are determined by plant species. Plants normally grown under low levels of fertility include many ferns and fleshy plants such as Peperomia. Plants needing high nutrient levels include rapidly-growing species and large-leaf plants such as Ficus and Schefflera.

Salt, both from fertilizer and irrigation water, can build up unless the root area is periodically flushed with excess water which is allowed to drain away. This is true when plants are over-fertilized during periods of low light and/or little growth.

Since visual symptoms such as stem rot and leaf necrosis in new growth are similar to those of overwatering, the soil should be tested for soluble salts. **WT&T**

What is so rare as a day in May? Especially with no leaf spot.

Leaf spot. It's a spoiler. Give it half a chance and it'll go after your grass.

To protect the beauty and playability of your turf from leaf spot, get new ®DYRENE 4 Turf fungicide.

Now available as a flowable, it is not only easier and cleaner to use, but much more economical, too. For control of leaf spot, DYRENE 4 can be applied at *half the rate* of DYRENE wettable powder, yet will provide *twice the residual.*

DYRENE has always been an essential part of any complete program of disease control. Now, it's economical, too. Always read the label before use.

DYRENE.
IT STOPS THE SPOILER.

Mobay Chemical Corporation
Specialty Products Group
Box 4913, Kansas City, Mo. 64120

DYRENE is a Reg. TM of Mobay Chemical Corporation.

Introducing

From LESCO, the company that listens and responds to customer needs, comes a complete new line of small-particle sulfur-coated urea fertilizers.

Specifically designed for low-cut turf, the new ELITE fertilizers from LESCO provide many more particles per square foot than coarser-grade products that can cause speckling. That means consistent greening and a more uniform distribution pattern. In addition, the slow-release feeding provided by the sulfur-coated urea insures steady growth and long residual.

Shown is a half-gram each of granular sulfur-coated urea fertilizer (– 6/+ 16) and LESCO ELITE sulfur-coated urea fertilizer.

The chance of mower pickup is virtually eliminated with ELITE fertilizers because the new small particles readily filter into the turf.

The chance of mower pickup is virtually eliminated with the new LESCO ELITE fertilizers.

Granular Sulfur-Coated Urea (– 6/+ 16)

LESCO

ELITE

And because LESCO manufactures its new ELITE fertilizers using sulfate of potash, there's more plant-available sulfur and low potential for burn.

The fertilizer you've been waiting for is available now in six analyses: 21-0-16, 19-0-19, 15-0-30, 12-24-14, 21-4-12 and 31-0-0.

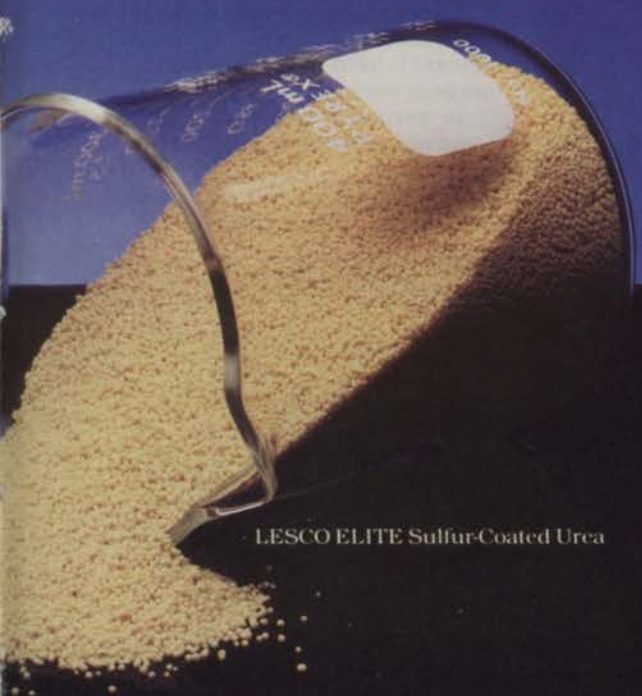
LESCO ELITE is available now in a variety of analyses.

To order the ELITE fertilizer that best fits your needs, call us toll free today.

(800) 321-5325 NATIONWIDE

(800) 362-7413 IN OHIO

Circle No. 251 on Reader Inquiry Card



LESCO ELITE Sulfur-Coated Urea

LESCO

LESCO, Inc., 20005 Lake Road, Rocky River, Ohio 44116 (216) 333-9250

THE DECIDING FACTOR

Water. Its availability may be the deciding factor when choosing a turf variety. Your choice should reflect water availability in your area.

by Dorothy F. Borland

Buffalograss provides a nice turf on this home lawn in the month of June.

It's national news every night. In newspapers across the country, the water shortage is reported. The potential repercussions of long-term shortages are highlighted.

Because of the shortage, methods are being explored to eliminate or ease the low water supply.

Two common methods are: (1) finding new water supplies through construction of water diversions or buying water rights; or (2) through restrictions on how available water may be used. Obtaining new water supplies is time consuming and quite expensive.

Regulating water use is an easier method. Unfortunately, too many municipalities prefer to legislate than educate on intelligent water use, especially in relation to water use in the landscape.

Of water used in urban areas, estimations indicate approximately 50 percent is used on the landscape. This usage is very visible.

In response to water shortages, some municipalities have limited the

Dorothy Borland is a turfgrass consultant with The Turf Expert in Denver.

The smooth brome/tall fescue mix at two maintenance levels. At left, irrigation every three days. At right, irrigation as needed, perhaps twice a month. Notice the difference in turf density.

To find a grass tougher than our new Aspen Kentucky bluegrass, you'd have to go undercover.

When searching for the ultimate turf, the grass to keep an eye on is Aspen, the elite new Kentucky bluegrass from Northrup King.

With qualities such as superior disease resistance, excellent color and texture, winterhardiness, heat tolerance, and wide adaptability, we think Aspen is not only the toughest, but the best bluegrass variety around.

Anything better would be downright unnatural.

You'll find Aspen only in Northrup King's Medalist Turf Mixtures. To uncover more information, contact Northrup King, P.O. Box 959, Minneapolis, Minnesota 55440.

Aspen / NK NORTHRUP KING

Circle No. 131 on Reader Inquiry Card

TABLE 1

Dryland turf possibilities

NATIVE TO GREAT PLAINS	INTRODUCED
WARM SEASON	
Buffalograss	Bermudagrass
Blue grama	Zoysia
Sideoats grama	Windmillgrass
Saltgrass	
Nimblewill	
COOL SEASON	
Western wheatgrass	Kentucky bluegrass
Thickspike wheatgrass	Crested wheatgrass
Streambank wheatgrass	Smooth brome
	Tall fescue

TABLE 2

Grass	C/W[1]	I/N[2]	B/S[3]
Kentucky bluegrass *Poa pratensis*	C	I	S
Smooth brome *Bromus inermis*	C	I	weak S
Tall fescue *Festuca arundinacea*	C	I	B
Crested wheatgrass *Agropyron cristatum* or *A. desertorum*	C	I	B
Western wheatgrass *Pascopyrum smithii* was *Agropyron smithii*	C	N	S
Buffalograss *Buchloe dactyloides*	W	N	S
Blue grama *Bouteloua gracilis*	W	N	B
Bermudagrass *Cynodon dactylon*	W	I	S

[1]C = cool season; W = warm season
[2]I = introduced grass; N = native to Great Plains
[3]B = bunch grass; S = sod former

size of bluegrass lawn that is allowed. Homeowners and commercial developers try to reduce water costs by eliminating the most water intensive part of the landscape—the lawn.

Oftentimes, the bluegrass lawn is replaced with non-water-using materials such as gravel or lava rock.

Rock, in small quantities and in tune with the landscape, can be an attractive addition.

All too often, any grass that is removed is replaced, almost inch for inch, with acres of rock. Few of us find large acreages of identically-sized rock attractive. We often don't consider the increased heat load on the building from this material.

With these developments as impetus, plus the desire to reduce maintenance, people are looking for landscape plants and grasses that can be substituted for bluegrass and more traditional plants without a loss in the visual quality of their landscape.

Drought tolerance

In the past, we have been led to believe that "you can't overwater bluegrass" and that bluegrass is not drought tolerant. These are both false, yet hard to shake from our landscape beliefs.

In commercial settings, the major concern is reducing water costs while maintaining a green landscape. The homeowners typically are more interested in reducing the time they must spend in their yard with water savings as a secondary benefit.

In reality, reducing water use will also reduce maintenance needs, resulting in savings of water, time, and money.

Turfgrass research at universities across the country are exploring two areas: (1) water needs of the familiar turfgrasses and breeding more tolerant varieties of these grasses; and, (2) new species of grasses.

Both areas of research are valuable and needed. Here, we will concentrate on new grasses for turf use.

No cure-all

There are quite a few grasses that show promise as turfgrasses while offering low water and maintenance needs. But there is no one grass that is the answer for all situations and no grass is completely bad.

Also, there are several techniques that can be used on any turfgrass to reduce water use and maintenance, methods such as reducing turf areas with decks or shrub beds, monitoring irrigation amounts closely, and reducing mowing frequency.

To find "new" turfgrasses, turf researchers and managers have been looking to range science and to neglected areas where grasses have naturalized and are thriving without irrigation. If these grasses can perform well with only natural precipitation, their performances should improve with a little supplemental irrigation and fertilization.

Many times, people associate dryland grasses with native grasses (Table 1). This is often not the case. Some prefer to concentrate more on the warm season/cool season classification than on the native vs. introduced classification.

If a grass is adapted to an area and can survive without irrigation, it has potential for turf use.

There is no one grass that is the answer for all situations and no grass is completely bad.

A cool season grass (bluegrass, ryegrass, and tall and fine fescues) produces bursts of growth in the spring and fall when temperatures are cool. Without supplemental irrigation, these grasses will go into a natural dormancy mid-summer until cooler temperatures and moisture return.

On the other hand, warm season grasses, such as bermudagrass, buffalograss, and zoysia, produce their best growth when temperatures are warmer in the middle of the summer. Warm season grasses go dormant and turn tan when temperatures drop and days grow shorter.

In Colorado, buffalograss goes dormant after the first heavy frost and remains tan colored until about three weeks after bluegrass has begun to green-up.

Knowledge of the growth cycle of the grass affects the fertilization program and the winter appearance of the turf. In many southern states, dormant bermudagrass is overseeded with a ryegrass in the winter to maintain a lush green turf area.

This is most common on golf courses at winter resorts. This shows that dormant winter-season grass is not acceptable.

Let's look at some cool season grasses that can be used as turf. Table 2 lists characteristics of these grasses.

Kentucky bluegrass

Although bluegrass is the turf standard, it can be used selectively in a landscape, and with a little extra attention, can prosper with reduced

the CLEAN-UP MACHINE

- QUALITY
- RELIABILITY
- SERVICE

Picking up debris in Culvert.

Self unloading with hydraulic door.

Picking up leaves in hedgerow.

THE BROUWER-VAC . . . largest capacity Vac on today's market. The powerful suction head and blower provide the latest technique for vacuuming turf *and* hard surface areas.

It provides an economical method of picking up grass clippings, leaves, twigs, pine needles and thatch from verti-cutting on sod farms, golf courses, parks and recreation areas and also trash and litter from hard surfaces in airports, parking lots, stadiums and highway shoulders. It vacuums acre after acre without wasteful frequent unloading stops. Fast easy self-unloading is via hydraulically operated door and conveyor. The optional Vac extension hose is spring balanced for ease of handling and allows the operator access in hard to reach areas around trees, flower beds, fences and culverts.

The Brouwer-Vac, designed to provide an economical, fast, efficient and reliable way to "clean-up", it enhances the beauty and cleanliness of turf and hard surface areas.

FEATURES:

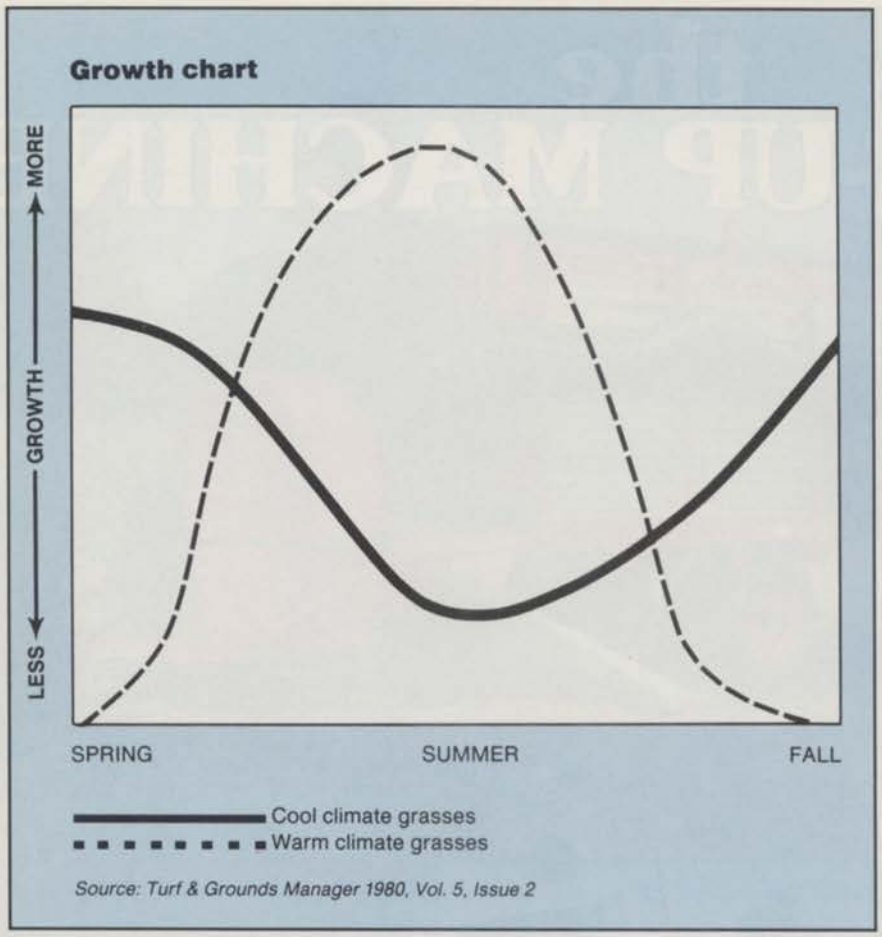
- Large load capacity
- Light weight construction
- Dual flotation tires
- Easy to operate finger tip controls
- Unloads in seconds with hydraulic driven conveyor
- 80 in. floating suction head (Opt. extension to 120 in.)
- P.T.O. Driven
- Only requires standard tractor 35-45 hp

BROUWER
TURF EQUIPMENT LIMITED

7320 Haggerty Rd./Canton, MI. 48187 Telephone (313) 459-3700
Woodbine Avenue/Keswick, Ontario, Canada L4P 3E9 Telex 065-24161 Telephone: (416) 476-4311

86-58

Circle No. 101 on Reader Inquiry Card



Of the water used in urban areas, estimates indicate approximately 50 percent is used on the landscape.

water use and maintenance.

Bluegrass is the standard for comparing other grasses. Comparisons of plant characteristics such as leaf texture and plant tolerances use bluegrass as a point of reference.

Bluegrass has surprising drought tolerance. If unirrigated, the grass will go brown but will resprout from the rhizomes or underground stems when favorable conditions return.

It is by these rhizomes that bluegrass forms the tight sod with which we are familiar. It responds well to irrigation, fertilization, and mowing. Newer varieties have increased resistance or tolerance to heat, drought, disease, wear, and compaction.

Smooth brome/tall fescue

Smooth brome and tall fescue have been used as a turf mix in an office complex for at least six years in Denver. It is a cool season mix first created to reduce visible drought stress during summer months.

Smooth brome is a weak sod former and tall fescue is a bunch grass. Both of these grasses are widely used as pasture grasses in the Great Plains.

The leaf texture (width) is much coarser than bluegrass. However, unless bluegrass is planted adjacent to this mix, most people do not realize it is not bluegrass.

This mix offers better visual drought tolerance than bluegrass and when mowed only every two weeks can be used to delineate areas for aesthetic appeal. The seed costs, using an "old" variety of tall fescue, can be as little as one-half that of bluegrass.

Tall fescue

Tall fescue is sometimes considered to be a weedy grass that is difficult to control. The improved varieties have almost-bluegrass leaf width and when planted as a monoculture, a tall fescue lawn is beautiful.

Some recommend this cool season grass as a method to reduce maintenance by mowing every two weeks to a height of four inches.

Researchers at the University of Nebraska have extensive plots mowed at both one and two inches and both look great.

According to Dr. Terry Riordan (University of Nebraska), if a grass can maintain turf quality at one- and two-inch mowing heights, it will also be acceptable under less intensive maintenance schedules.

Tall fescue has a higher water use rate than bluegrass. Its drought tolerance is tied to its four foot deep root system, enabling it to tap a large soil volume for moisture. This grass is now available as sod in several states including Colorado, California, Texas, and New Mexico.

The seed is fairly large and seeding rates range from four to 10 pounds per 1,000 sq. ft. By postponing fertilization until early June after the natural flush of growth, excessive growth can be reduced.

The wheatgrasses

There are several wheatgrasses with turf potential. The two most promising at this time are western and crested or fairway wheatgrass. Both these wheatgrasses will tolerate precipitation as low as 14 inches per year, which can influence the amount of supplemental irrigation applied in season.

Western wheatgrass is a native sod forming grass. The aggressiveness of the rhizomes of this grass, as with most grasses, is related to the available water and nutrients. It is closely related to quackgrass (*Elytrigia repens*, was *Agropyron repens*). Most western wheatgrass has a bluish tinge to the foliage which can give an added visual feature in the landscape.

Emergence of the seed can be expected in two to three weeks, a rate that is a little slower than bluegrass. This should be considered when including this grass in a mix because western wheatgrass may not be visible the first season due to competition from the other germinating grasses.

Fairway wheatgrass is a selection from the crested wheatgrass complex. Fairway is leafier and shorter in height, making it the more suitable variety for turf use.

It is a cool season bunch grass and is one of the most widely used grasses for highway revegetation. The leaf texture is between bluegrass and tall fescue. Fairway wheatgrass responds well to irrigation, fertilization, and mowing and will prosper in a pure stand or in a mix.

Bermudagrass

Now what about warm season grasses? (Table 2) A problem with warm season grasses used in urban

Introducing the 7-Year Limited Warranty

For years we've had an open and shut case for quality in irrigation system valves. Now we're putting a promise behind our words.

The 8000BCR Series of contamination-resistant, 1" to 3" bronze valves is so tough and dependable that Weather-matic is backing them up with a new 7-year limited warranty!

But there's even more. Our direct burial, remote control valves are available in other models, too. The new 7000E Series offers competitively priced bronze valves in ¾" to 2" sizes. The 11000 Series features 1" to 2" sizes of high-strength, glass-filled plastic construction. Both carry 1-year limited warranties.

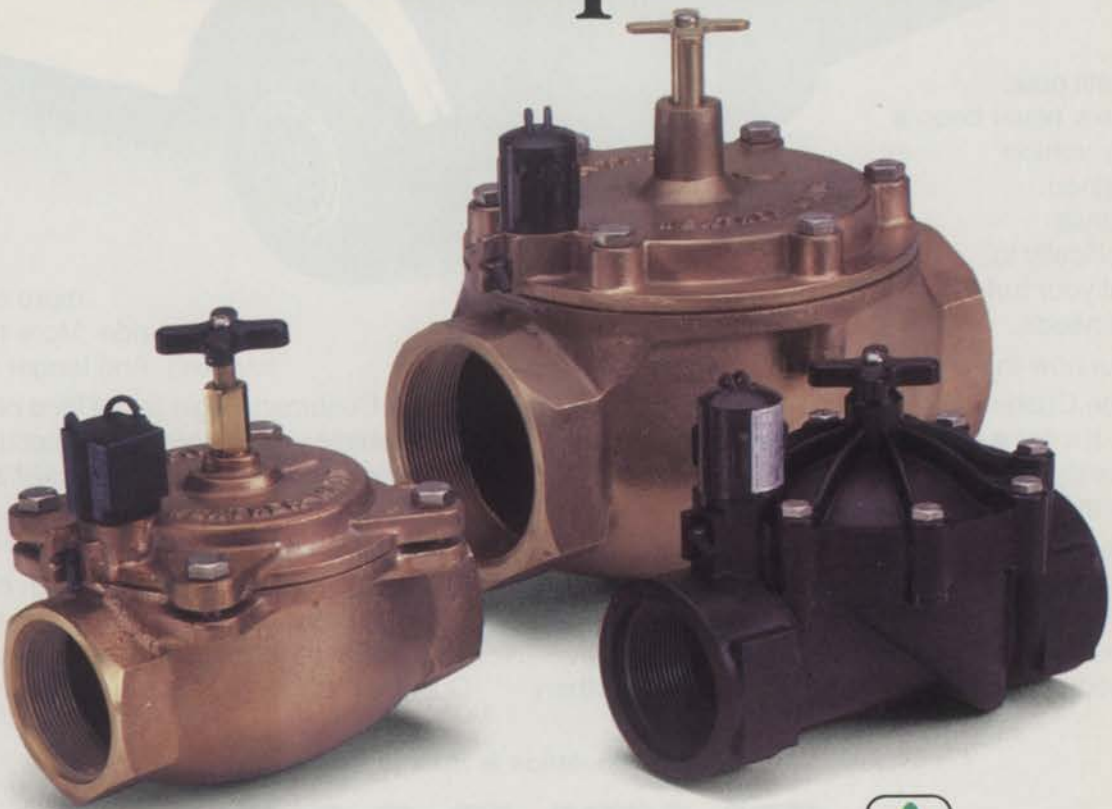
All Weather-matic valves are the normally-closed type. Design features include a unique dual ported flexing diaphragm that minimizes clogging and malfunctions without traditional bleed tubes or channels. An easy-to-use manual bleed lever bleeds valves to downstream. And every valve is water pressure-tested before leaving the factory.

Weather-matic valves have been providing top performance around the country for years. Teamed up with our controllers, sprinkler heads and Rain-Stat®, they work and work and work.

That's why more and more irrigation professionals say you can't beat the system — when the one you choose is Weather-matic.

For complete information, write or call today.

What an opener!



Sprinkler Division, Telsco Industries
P.O. Box 18205 • Dallas, Texas 75218
214/278-6131

Weather matic®
LAWN AND TURF IRRIGATION

Circle No. 146 on Reader Inquiry Card

INTRODUCING THE CUSHMAN EAGLE.™

A new standard of performance.

Until now, there's never been a utility vehicle designed and built specifically to meet your turf-care needs.

But now there's the Cushman Eagle.

The Cushman Eagle is not a converted golf cart. It's not a redesign. It's a revolutionary new turf utility vehicle that sets a new standard of performance.

You can choose from more options to meet a wider range of needs. Bodies made of sleek, dent-resistent polyurethane or time-tested diamond-plate steel. Models that allow four passengers to face forward. You get a smoother, more comfortable ride. More responsive handling. And longer service life.

The Cushman Eagle is the kind of rugged, reliable vehicle you've come to expect from Cushman, the leading manufacturer of cost-efficient time savers. A comparison will convince you of its performance. The price will convince you of its value.

Test drive one at your Cushman dealer today or call for more information. You'll see that nothing else works as well or looks as good as the new Cushman Eagle.

Our Reputation is Built to Last.

CUSHMAN

5288 Cushman, P.O. Box 82409, Lincoln, NE 68501
Toll-free: 1-800-228-4444

© Outboard Marine Corporation, 1986. All Rights Reserved.

Circle No. 103 on Reader Inquiry Card

Keep A Great Thing Growing AMERICA TREE CITY USA

All across America hundreds of cities, large and small, are joining a growing movement...Tree City USA. From Manchester, Maine, to Pacific Grove, California, people are planting and caring for trees.

What is Tree City USA? It is a national urban forestry program designed to make every community a better place in which to live. It is a proven program where American cities and towns are given the guidelines for effective urban forestry management.

Be a part of this growing movement. Join New York, Chicago, Anaheim, Greenleaf and Broken Bow and support Tree City USA where you live.

For more information, write: The National Arbor Day Foundation, Nebraska City, NE 68410.

The National Arbor Day Foundation
Nebraska City, Nebraska 68410

areas is their lack of shade tolerance. In shady areas, weedy cool season grasses may invade and dominate over time.

Bermudagrass is a familiar grass in many sections of the country. The bermudagrasses that seem to have the most potential for "dryland" turf are the locally-adapted varieties. In northern Colorado, some say the hybrid, improved bermudagrass varieties do not have the needed winter hardiness to survive.

This grass has great characteristics as a low water and maintenance turfgrass. It is a warm season grass with aggressive rhizomes and stolons and has excellent heat, drought, and salt tolerance.

...reducing water use will actually reduce maintenance needs, resulting in savings of water, time, and money.

However, the very characteristics that make bermudagrass attractive for low maintenance lawns also make it a terrible weed where it is not wanted.

In areas of southern and western Colorado, locally-adapted bermudagrass is the only grass that can tolerate the hot, dry, and sometimes salty (saline) conditions. Availability of seed and/or stolons is based on collections of the grass within an area.

Buffalograss

This native warm season grass has been looked upon as the panacea for lawns in parts of the Great Plains. Around the turn of the century, buffalograss was widely used in the Midwest as a lawn grass.

Buffalograss and blue grama were found in associations over approximately 90 percent of the Great Plains. Obviously these grasses have the heat and drought tolerance to survive in our lawns.

Buffalograss spreads by stolons or above-ground runners. Its maximum height is six to eight inches which makes the grass attractive as a "no mow" lawn. It has both male and female plants and flowers. The male flowers extend above the foliage while the female flowers and seeds are nestled in the foliage, close to the ground.

Special seed harvesters and techniques are needed for buffalograss, increasing the cost of seed. The seeds are found inside burs, two to five seeds per bur. By using treated seed, buffalograss will emerge in seven to 10 days with establishment irrigation.

Blue grama

Also a native grass, blue grama has a familiar and attractive seedhead. It is a bunch grass and is often mixed with buffalograss for diversity and to reduce seed costs.

All eight grasses discussed here tolerate mowing at 2½-3 inches on a weekly basis, although less frequent mowings may be beneficial to the grass. They all respond to fertilization and irrigation and make an acceptable turf.

These grasses have been selected for examination in research plots because of their adaptations to a semi-arid climate and tolerance for increased moisture and other maintenance practices.

All organisms have pests, these "new" grasses included. As an industry, we don't know all the pests that might cause problems or which chemicals will work and which may burn the foliage.

Many pest outbreaks, especially diseases, can be prevented by maintaining a healthy stand of grass. Water for these alternative grasses is the key for reducing disease incidence just as it is for bluegrass.

When selecting a grass, be it bluegrass or another, develop long-term maintenance practices to match the needs of the grass.

Regardless of the grass selected, good horticulture practices such as soil preparation, proper placement of plants, well designed irrigation systems and appropriate irrigation schedules, and matched maintenance schedules will benefit the grass selected. The maintenance schedule should also show reduced costs through reduced maintenance and water used.

In some areas of the country, using other grasses is more critical now than in other areas. However, in all parts of the U.S., unless we can figure out how to supply the natural precipitation evenly throughout the year, there will be more interest and emphasis on lower water using plants. The green industry could suffer considerable damage if landscaping is forbidden or restricted as a method of conserving water.

We, as an industry, can prevent this by developing or introducing plant material better adapted to the climatic variations in our area and by working with municipalities to help educate the public on attractive water conserving landscaping techniques and options, before ordinances are enacted. **WT&T**

Inverness Club superintendent Tom Walker is confident the "Hinkle Tree," the blue hills spruce directly behind him, will provide the barrier needed between the 8th and 17th holes.

IDYLLIC INVERNESS

Superintendent Tom Walker keeps his course, host of this year's PGA Championship, in superb shape with a 'light and frequent' maintenance program.

by Ken Kuhajda, managing editor

It doesn't look like much, the blue hills spruce that sits near the tee of the 8th hole. But it sure made Inverness Club in Toledo, Ohio, even more famous.

It's become known simply as the "Hinkle Tree," the 25-footer that golfer Lon Hinkle made famous at the 1979 U.S. Open.

During the opening round, Hinkle decided to take a short cut on the par 5, 528-yard, dogleg left 8th hole by hitting his tee shot through a narrow opening and into the parallel 17th fairway.

From the 17th fairway, the no. 8 green was reachable in two strokes. may have been the only Open participant to realize that, and during the first round, he hit a one-iron and two-iron, and then two-putted for birdie.

Word spread and two other golfers birdied the hole. The next day, golfers were surprised to see the scraggly blue hills spruce in the slight gap Hinkle had hit through.

On Friday, Hinkle was unaffected by the tree. He hit his driver over the Hinkle Tree and into the 17th fairway for another birdie.

Superintendent Tom Walker and tournament officials are hoping the same thing won't happen this year when Inverness hosts the PGA Championship Aug. 4-10. The tree is several feet taller, and the woods between the 8th and 17th holes has grown considerably more dense.

The Hinkle Tree has added to the legend of 83-year-old Inverness, host of four U.S. Opens (1920, 1931, 1957, 1979), one U.S. Amateur (1973), and a PGA Championship (1986).

Number 18 at 354 yards is probably the shortest finishing hole on a major U.S. course. But the tiny green, bunkered front and left, slopes to the right and back, thus creating a challenge even for the pros.

Maintenance tricks

Walker tends a course that exhibits common northern characteristics: bentgrass tees and greens, bentgrass and poa annua fairways, and a bluegrass/tall fescue mix in the roughs. He says that only subtle changes are being made in preparation for the PGA.

The course has 94 sand traps, some of which are bordered by yarrow, a noxious weed that Walker lets grow and then uses to his advantage.

Hundreds of varieties of trees dot the course, some of which were gifts from members. "We have a membership who loves their trees. We try to bring in some different trees for them," says Walker, pointing to a fern leaf beech.

A paperbark maple in the 9th fairway is a gift from a doctor

The proof is in the putting.

The Greens King® IV with the revolutionary new Turf Groomer™ greens conditioner has no equal for producing faster, truer greens, *without* lowering height of cut.

Exclusive roller design features bevelled edges to "pucker-up" horizontal runners.

The knife blades rotate through slots in the front rollers, slicing horizontal runners before they lie down.

The horizontal reel follows closely behind to clip grass while it's standing straight, for faster, truer greens without lowering height of cut.

This unique, patented greens care system, a Jacobsen exclusive, concentrates on troublesome thatch and horizontal runners that can slow down putting, or even throw off putting accuracy.

The front roller "puckers up" horizontal runners and plant leaves, readying them for clipping.

Then, the powered knife blades rotate *through* the slots in the front roller, cutting horizontal runners and removing thatch that can choke a green to death.

The reel follows closely behind, neatly cutting the grass while it's still standing straight and true.

The result: Faster, truer putting and healthier, hardier greens, ready for play. And, you get all this without reducing the height of cut.

So, contact your Jacobsen Distributor to arrange a free demonstration. And, put this revolutionary new greens care system to the test on your own proving ground.

Finance plans available. Jacobsen Division of Textron Inc., Racine, WI 53403. Telex: 264428.

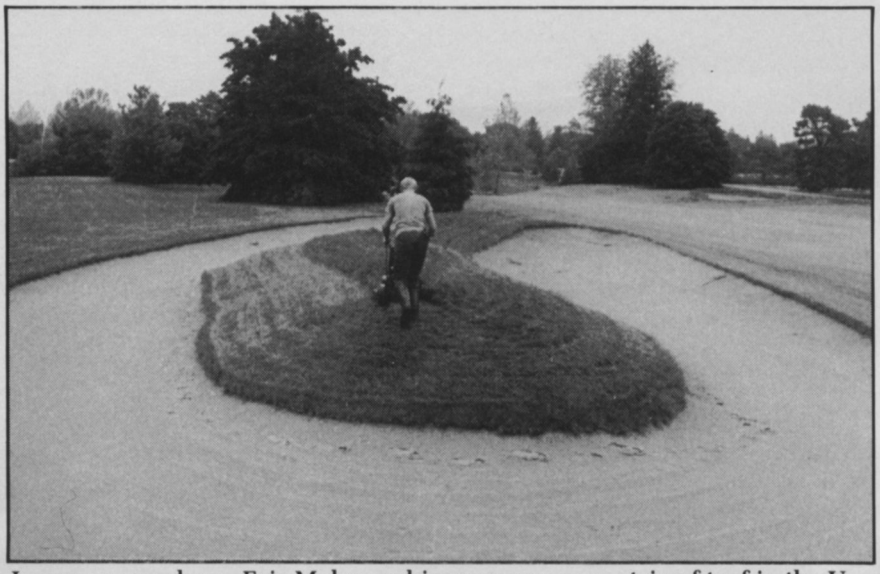
Greens King and Turf Groomer are trademarks of Jacobsen Division of Textron.

JACOBSEN
TEXTRON

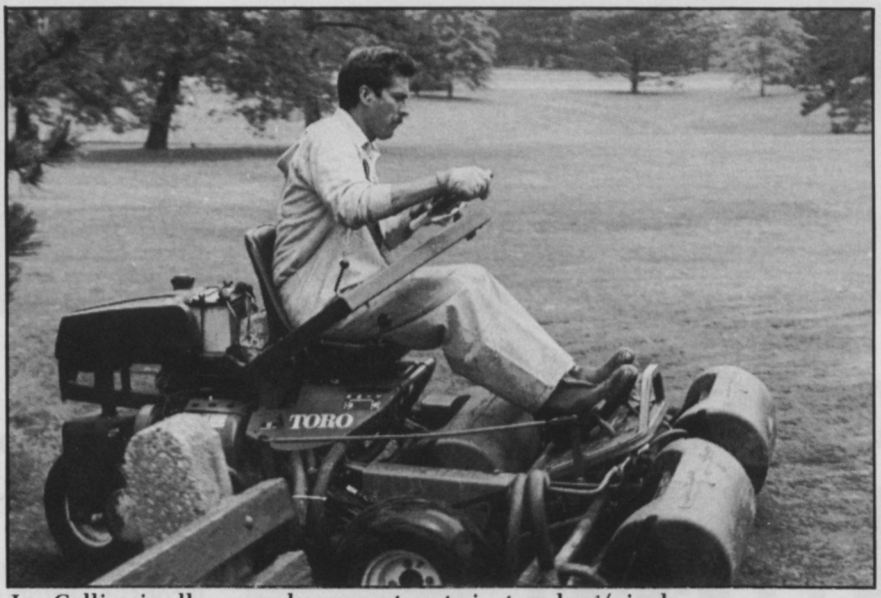
Jacobsen Division of Textron Inc.

Circle No. 117 on Reader Inquiry Card

© Jacobsen Division of Textron Inc. 1986 J-15-6



Inverness employee Eric Malczewski mows a narrow strip of turf in the U-shaped sand trap that sits in the fairway between holes 14 and 15.



Jay Collins is all eyes as he mows tees to just under 1/4-inch.

member, says Walker. "We have more than 10,000 trees."

Inverness has its own nursery of sorts but it is temporarily uprooted in preparation for the PGA. It lost a territorial battle to the press tent. Walker says trees generally grow four to five years before they are planted on the course.

'Lightly and frequently'

In maintaining the trees and turf, Walker says he has no tricks. But after talking with him, it's evident that his maintenance program should be labeled "lightly and frequently."

The trees are frequently pruned by Inverness staff.

He uses a low nitrogen program, fertilizing lightly and frequently (every two weeks). He feeds his turf a lot of potassium.

He aerifies the greens in the spring and fall, the fairways in the spring and sometimes in the fall, and the tees continuously in the summer months.

He topdresses the greens lightly every two weeks.

In addition, he verticuts frequently, using a Toro riding greensmower. "It helps speed up the greens but certainly doesn't help with thatch," says Walker.

He mows his tees at just below 1/4 inch, the fairways at just below 1 inch, and the greens at just under 1/8 inch. The rough is kept at anywhere from 1 to 4 inches.

Strong support

With all his maintenance activity, Walker needs both a big and capable crew. He's lucky. He has both.

About 30 workers toil the turf at Inverness (mainly with Toro and some Jacobsen equipment), with just five remaining year-round. Walker repeatedly points out his crew's talent.

> *'We have a membership who loves their trees. We try to bring in some different trees for them.'*
>
> *—Tom Walker, superintendent*
> *Inverness Club*
> *Toledo, Ohio*

"I'd put this crew up against any in the country," says Walker. He adds there's something special, an added incentive, when preparing for a major tournament.

"Something like the PGA pulls them together. They realize it's a once-in-a-lifetime event and they get to participate in it," he says.

The crew is an interesting bunch. Assistant superintendent Tim Kennelly, 23, already has eight years golf course experience. He has an associate degree of turfgrass management from renowned Michigan State University.

The tall, blond Kennelly worked for Walker at Highland Meadows. He also worked two summers at famed Oakmont Country Club in Oakmont, Pa. The youthful Kennelly says he doesn't feel great pressure to perform.

"I don't think age is an issue. It's ability and experience," says Kennelly, who hopes to land his own superintendent's job after this year's PGA.

Kennelly says he knew he wanted to be a golf course superintendent by his sophomore year in high school.

Crew member Aaron Asmus aspires to land an irrigation construction job in Florida when he graduates from the Agricultural Technical Institute (a part of Ohio State University) in Wooster, Ohio.

MAVRIK®. ALL THE AMMUNITION YOU NEED.

Now. Take your best shot against insects and mites.

No matter what you're taking care of, MAVRIK AQUAFLOW® Insecticide will take care of your insects and mites.

There has never been a single product that handles so many pests, while being so convenient to use and so safe to plants. MAVRIK is a non-restricted material, and it has been tested on more than a hundred ornamental species without a report of any phytotoxicity.

MAVRIK is a water-based flowable, so it's convenient to mix, and there is no odor and very little visible residue. The dilution range is flexible—use more for mites, less for most other pests.

Use MAVRIK on trees, shrubs, lawns. Use it on aphids, thrips, whiteflies, worms, blackvine weevils, two-spotted and European red mites. Once applied, MAVRIK won't hurt bees or most other beneficials.

You won't find the convenience and broad spectrum coverage of MAVRIK in any other product. And since MAVRIK is available at your local distributor, all you have to do is ask for it.

Zoecon Corporation, a Sandoz Company
Crop Protection Division
Palo Alto, California 94304

Use pesticides effectively. Read and follow label directions carefully.

© 1986 Zoecon Corporation
MAVRIK and MAVRIK AQUAFLOW are trademarks of Sandoz, Ltd.

Circle No. 147 on Reader Inquiry Card

Walker allows the noxious weed yarrow (some varieties are known as Queen Anne's Lace) to grow free in the traps, creating an ornamental look.

A member of a religious singing group, summer helper Asmus will graduate in the spring, 1987 with an associate degree of applied science in turfgrass management.

Fellow crew member Chase Clements Jr. has a well-known name in the Toledo area. His father, Chase Clements Sr., is a columnist for the local *Toledo Blade* newspaper. Chase Jr. is also an aspiring writer.

A long career

Walker, in his sixth year, is preparing for his first major tournament. That's something special for a man who began raking bunkers at Inverness when he was 14.

When former superintendent Wilbert Waters retired in 1980, his understudy Walker came back to Dorr Street (Inverness' location in southwest Toledo) to fulfill his dream.

"I'm really proud of this course," says the 35-year-old. "Being the superintendent here is something I've always wanted to do."

Walker, with an agronomy degree from Ohio State University, has also worked at Muirfield Village Golf Club (Dublin, Ohio), Kettenring Country Club (Defiance, Ohio), and Highland Meadows (Sylvania, Ohio).

Inverness, 1986 style

When Inverness hosted its first U.S. Open in 1920, contestants were housed at five downtown hotels and paid rates ranging from $1.50 to $5 per night. They'll pay a little more this year.

And the course they'll play has also changed substantially.

In 1979, four new holes were added to relieve congestion and accommodate today's galleries. Numbers 3 (par 3, 185 yards), 5 (par 4, 401 yards), 6 (par 3, 220 yards), and 8 (par 5, 528 yards) were added for the 1979 U.S. Open.

The battle still rages between traditionalists and progressives about the additions. However, the PGA press kit notes: "...as the new holes mature and the memory of those eliminated fades, the furor has somewhat subsided. Most of Inverness is still pure Donald Ross (the original architect)."

> *'Something like the PGA pulls (the crew) together. They realize it's a once in a lifetime event and they get to participate in it.'*
>
> —*Tom Walker*

The course measures 6,982 yards with a par of 71.

There's no arguing over the fact that Inverness is well-respected and highly-rated in the golf world. *Golf Digest* ranked Inverness 55th among the nation's top 100 golf courses in 1985.

Back to normal

Walker and crew admit there's something special about preparing for a major golf tournament. But when the last hot dog wrapper is vacuumed after the PGA, Inverness will return to serenity with its 220 members at center stage.

That's fine for Walker, who knows success begins and ends with your members. "Our members care about this course as much as we do," says Walker, who prefers to stay behind the scenes.

Walker believes he and the crew are doing their jobs when they don't hear from the members. "Few know where my building is but if we have to shut the course down on a wet day, I'll be in the men's grill going from table to table explaining to them what we're doing," says Walker.

It could be that kind of attitude that makes Inverness a great place to belong and one of America's top courses. **WT&T**

WE REACH THE PEOPLE YOU NEED TO REACH!

Place a classified ad in any of these **HARCOURT BRACE JOVANOVICH PUBLICATIONS** and you know your ad dollar is wisely spent.

Circulation	Magazine
12,464	AMERICAN AUTOMATIC MERCHANDISER
24,713	BEVERAGE INDUSTRY
10,355	BODY FASHIONS/INTIMATE APPAREL
3,519	CANDY INDUSTRY
10,295	CANDY MARKETER
20,406	CONCRETE
100,414	DENTAL MANAGEMENT
6,372	DERMATOLOGY TIMES
12,608	DRUG & COSMETIC INDUSTRY
33,366	DVM NEWSMAGAZINE
22,571	FLOORING
67,708	FOOD & DRUG PACKAGING
59,625	FOOD MANAGEMENT
18,624	HEARING INSTRUMENTS
22,588	HOME & AUTO
42,543	HOTEL & MOTEL MANAGEMENT
13,697	HOUSEWARES
12,841	LAWN CARE INDUSTRY
15,496	LP/GAS
15,778	MEAT PROCESSING
13,115	NEUROLOGY
14,607	OPHTHALMOLOGY TIMES
23,501	OPTOMETRY TIMES
12,880	PAPERBOARD PACKAGING
12,830	PAPER SALES
14,902	PEST CONTROL
14,001	PETS SUPPLIES MARKETING
20,828	PIT & QUARRY
13,000	POULTRY PROCESSING
18,912	ROOFING/SIDING/INSULATION
9,177	SNACK FOOD
8,564	UROLOGY TIMES
45,665	WEEDS TREES & TURF

Don't forget that classified advertising works just as effectively in locating employees as it does if you are looking for a position, have a line, machinery or a business to sell, are seeking representatives or wish to buy a specific item. Let it go to work for you!

HBJ PUBLICATIONS does a better job of reaching those who count *(your potential customers)* than any other business publisher.

COUNT ON US TO REACH THOSE WHO COUNT!

Call Dawn Nilsen at 218-723-9200

HBJ **Harcourt Brace Jovanovich Publications**
One East First Street
Duluth, Minnesota 55802

F

RYAN® INTRODUCES THE

Lawnaire® IV

The self-propelled walk-behind aerator that does a professional job on home lawns and smaller turf areas.

- Equipped with 30-3/4″ coring tines providing an aeration pattern of 9 holes per square foot.
- Penetration up to 2 3/4″.
- Two weight options provided for increased downward pressure - a 38 lb. steel bar and/or steel drum that holds 55 lbs. of water.
- Convenient lift handle for raising and lowering transport wheels which provide added maneuverability.
- Covers up to 21,000 square feet per hour.
- Tine wheel shaft and water drum shaft are equipped with two grease fittings and protected by felt seals to keep out dirt.
- 3 h.p. industrial engine with rotary stop switch for easy shut-off.
- Fuel tank holds two quarts.

Designed for the professional who wants to provide quality core-type aerification at a high rate of speed, the new Lawnaire IV is the most dependable walk-behind roll-type areator on the market.

More and more homeowners are asking for lawn aeration to break down thatch and improve turf quality. The Lawnaire IV offers lawn care professionals and rental outlets a core aerator that pays for itself in just weeks.

LAWNAIRE IV SPECIFICATIONS

Model 544863

DIMENSIONS
Width . . . . . 28″
Swath . . . . . 19″
Weight . . . . . Dry-215 lbs.
Water in drum-265 lbs. (6.6 gallon capacity).

POWER
Engine . . . . . 4-cycle, 3 hp industrial with 6:1 gear reduction, dual air cleaner, with rotary on-off switch, low tone muffler.
Clutch . . . . . Belt tightener.
Driver . . . . . Primary: V-belt 4L-section to clutch idler. Secondary: #40 roller chain to tine assembly. Transport: #40 roller chain to barrel.
Lubrication . . . . . Two grease fittings in each axle hub.

UNIT
Penetration . . . . . Up to 2 3/4″
Aeration Pattern . . . . . 3 3/4″ x 7″ center to center.
Speed . . . . . Operation: 225 f.p.m. Transport: 190 f.p.m.
Productivity . . . . . Up to 21,000 sq. ft. per hour.
Tines . . . . . 3/4″ Coring-type, formed from .08″ thick heat-treated alloy steel, 30 tines per aerator.
Tires . . . . . Two 8 x 1.75 semi-pneumatic with ball bearings.

For more information call your Ryan Sales, Service and Parts Dealer today.

Or call toll-free 1-800-228-4444

OUR REPUTATION IS BUILT TO LAST

Cushman-Ryan, OMC Lincoln
P.O. Box 82409
Lincoln, Nebraska 68501-9971

Tine Replacement Part #522361

©Outboard Marine Corporation, 1986. All rights reserved.

Circle No. 105 on Reader Inquiry Card

Emergency access roads can be attractive; porous pavement is cost-effective solution

The $80 million Ritz-Carlton Hotel in Laguna Niguel, Calif., and the Trammel Crow Company's 14.6-acre business park (Clauset Centre in Costa Mesa, Calif.) needed something more aesthetically pleasing than concrete when it came to installing emergency access roads. So Sullivan Concrete Textures of Costa Mesa was selected to install Grasscrete for the resort's poolside and the business park's subterranean parking structure rooftop.

Grasscrete, a Bomanite process product of structurally sound porous pavement, has recently become dramatically more cost-effective.

In the past, the cast-in-place monolithic continuously reinforced grass and concrete pavement had been installed using plastic forms which were melted away during the construction process. A new installation technique developed by Bomanite Corp. uses special forms which can be withdrawn and used again. The result is a large reduction of material and labor costs which allows Grasscrete to be priced competitively with pre-cast grass and concrete products.

The Ritz-Carlton Hotel installed Grasscrete in two courtyards. The hotel frequently uses the area for barbeques which poses a fire threat.

"Because of an Orange County stipulation, we had to have fire truck access," explains Kevin O'Keefe, the Ritz-Carlton's director of landscaping. "Grasscrete was the only option we had in lieu of concrete or asphalt."

O'Keefe says the bluegrass/fescue

continued on page 58

The Clauset Centre in Costa Mesa, Calif, where Sullivan Concrete Textures of Costa Mesa performed the installation.

NEW TURF-TYPE TALL FESCUES

Now, more than ever the choice of professionals.

Join the rapidly growing number who select Tall Fescue for:

- *rich, dark green dense turf*
- *low maintenance*
- *soil and climate adaptability*
- *tolerance to shade and cold*

- *tolerance to heat and drought*
- *resistance to disease*
- *durability and longer wear*
- *year-round beauty and performance*

***Oregon Turf Type Tall Fescue** has all the superior qualities you want and need: beauty and rugged stability. Demand the perfect choice for low maintenance turf, ideal for playing fields, parks, home lawns, airfields, roadways, industrial and commercial sites and more.*

For more information contact your seed dealer, or write to:

OREGON TALL FESCUE COMMISSION

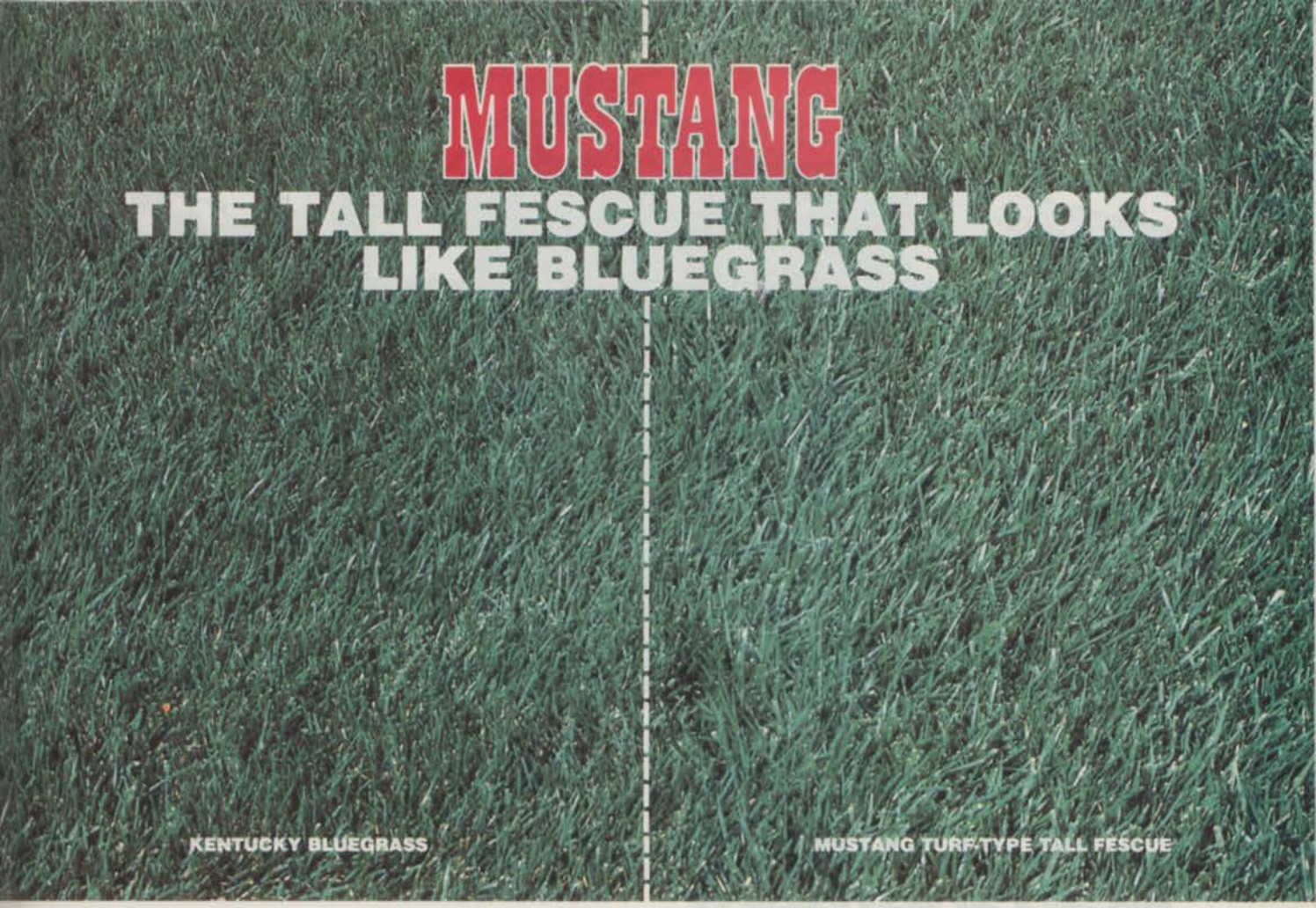
2140 Turner Rd. SE., Salem, Oregon 97302

Phone (503) 585-1157

Circle No. 134 on Reader Inquiry Card

MUSTANG

THE TALL FESCUE THAT LOOKS LIKE BLUEGRASS



BLUEGRASS QUALITIES WITH TALL FESCUE PRACTICALITY

You'll quickly notice Mustang's finer texture, rich dark green color and dense, uniform turf—and you'll understand why we say Mustang has bluegrass-like qualities.

But there's more to Mustang turf-type tall fescue than beauty; it's tough and durable. It's heat and drought tolerance, winter hardiness, and ability to endure low mowing heights are remarkable. Mustang even shows improved resistance to *Helminthosporium* netblotch and many other diseases.

Best of all, Mustang is practical, because it performs extremely well under low maintenance conditions like minimum fertilization, watering and mowing. National tests and actual applications in parks, golf courses and playing fields have proven it.

DROUGHT TOLERANCE AFTER SEVEN WEEKS NO RAINFALL.

That's why Mustang is becoming the favorite choice of professional turf managers, over K-31 and many other commercially available varieties.

For bluegrass qualities and tall fescue practicality, use the professional's choice—Mustang turf-type tall fescue.

Pickseed also produces

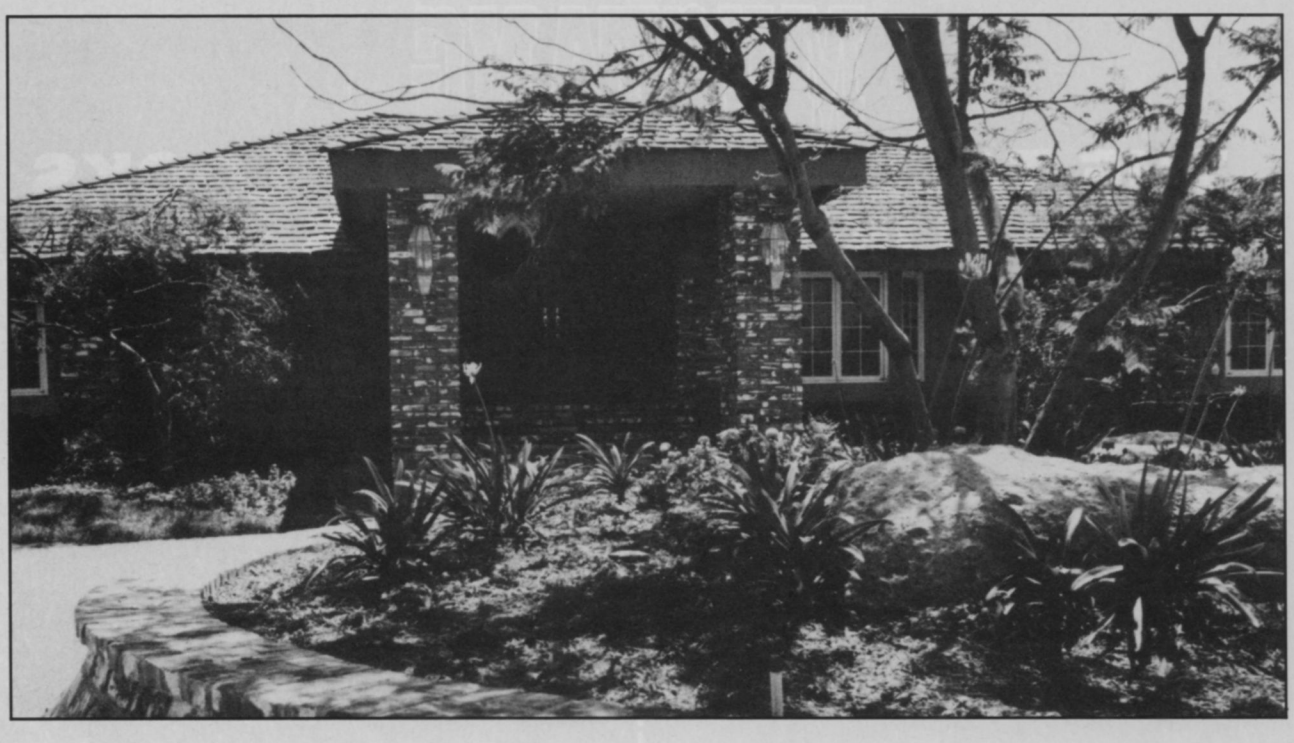
Fiesta PERENNIAL RYEGRASS and Banff Kentucky Bluegrass

and other fine turf grasses available nationwide from quality seed suppliers.

Produced by:

PICKSEED®
PICKSEED WEST Inc.
P.O. Box 888 • Tangent, Oregon 97389
(503) 926-8886

Circle No. 135 on Reader Inquiry Card



A Guide to Landscape Management

COOL-SEASON TURF/ WARM-SEASON TURF

Your complete guide to herbicides and fungicides, designed with the turfgrass manager in mind and sponsored by Elanco Products Co.

ELANCO

Published exclusively by WEEDS TREES & TURF magazine as a 22-page supplement to it's September issue, "A Guide to Landscape Management" promises to be a valuable reference you'll want to keep and refer to often.

The science of landscape management today is more planning ahead than reaction. With new technology, the landscape manager—nurseryman, golf course superintendent, landscape contractor, chemical lawn care applicator— must establish new standards by which to compare products.

"A Guide to Landscape Management" will help you more effectively select the right materials to make your job easier. A cooperative effort by the staff at Elanco and the editorial staff of WEEDS TREES & TURF, this special supplement will get you started toward beautiful landscapes.

Look for it in next month's issue of WEEDS TREES & TURF.

WEEDS TREES & TURF

HBJ A HARCOURT BRACE JOVANOVICH PUBLICATION

Rubigan is the best value for dollar spot, and it effectively controls fusarium blight, snow mold, stripe smut and is active on large brown patch when used with a Daconil 2787® tank mix.

Four years of field use show excellent control of dollar spot—even resistant dollar spot, at only 10-14 cents per 1,000 square feet per day of control.

For gradual reduction of *Poa annua* use cumulative rates of 2-3 oz./1,000 square feet and proper management practices. With Rubigan, you can maintain disease-free *Poa* or gradually reduce it.

For more information, call your distributor or write:

Elanco Products Company
A Division of Eli Lilly and Company
Dept. E-455, Indianapolis, IN 46285, U.S.A.

Rubigan®—(fenarimol, Elanco Products Company)
Daconil 2787®—(chlorothalonil, SDS Biotech Corporation)

Circle No. 107 on Reader Inquiry Card

Rubigan® controls dollar spot on greens, tees and fairways.

And you get more for your dollar.

mix he uses covers the Grasscrete well. However, he suggests that turf varieties with stolons, such as bermudagrass and St. Augustinegrass, may provide a more advantageous cover.

O'Keefe treats the turf in the Grasscrete area similar to other areas on the property. "Depending on the exposure, it may need a little more water," he says. "We use a broadleaf and it reacts the same as with other turf. It's worked out super for us."

The only drawback O'Keefe foresees is the possiblity of having to remove the Grasscrete in order to fix the irrigation system underneath. "The area is so big that we have to have heads in the middle," he says.

Applications for Grasscrete include emergency vehicle access roads where aesthetics is a consideration, parking lots where stormwater runoff and/or aesthetics are considerations, and erosion control applications.

Grasscrete is installed by a nationwide network of specially-trained and equipped contractors licensed by the Bomanite Corp. **WT&T**

Grasscrete, "the only option in lieu of concrete or asphalt," as it looks installed at the Ritz-Carlton Hotel in Laguna Niguel, Calif.

VORLAN®

For Victory Over Tough Turf Diseases

★ Proven Effectiveness —Leaf Spot, Red Thread, Dollar Spot (even resistant strains!) & Pink Snow Mold.

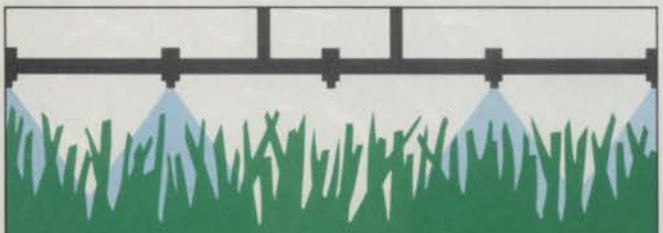
★ Effectiveness = Economy — So little lasts so long!

★ NO FUNGI PROBLEMS = HAPPY CUSTOMERS

Mallinckrodt

P.O. Box 5439 • St. Louis, MO 63147
800-325-7155

Circle No. 123 on Reader Inquiry Card



If you're not using Blazon®, you don't know what you're missing!

Contact Milliken Chemical for more information and the authorized Blazon® distributor in your area.

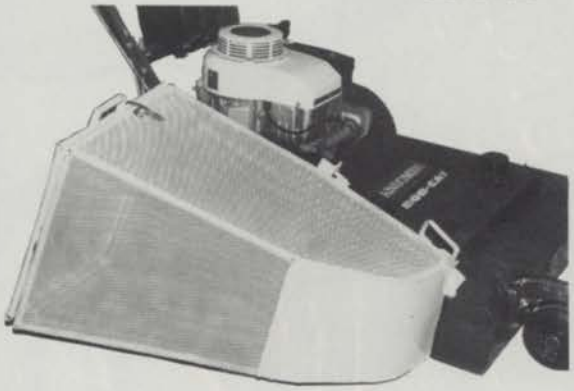
Milliken Chemical
Division of Milliken & Co.
P.O. Box 817, Inman,
South Carolina 29349
Telephone (800)845-8502 or (803)472-9041

MILLIKEN CHEMICALS

Circle No. 124 on Reader Inquiry Card

Catchers Falling Apart? try GRASS GOBBLER!

U.S. Pat. Pend.



- One-year warranty against breakage
- Reasonably priced
- Bracket fits: Bobcat®, Exmark®, Kees™, Bunton®, Toro®, John Deere®. *Please specify.*
- Hardened steel tubing frame and surfaces
- Seams fully welded; no screen or spotwelds

Call or send for more information.

(301) 330-0066

18761 A-D North Frederick Avenue
Gaithersburg, Maryland 20879

Lawn-Wright, Inc.

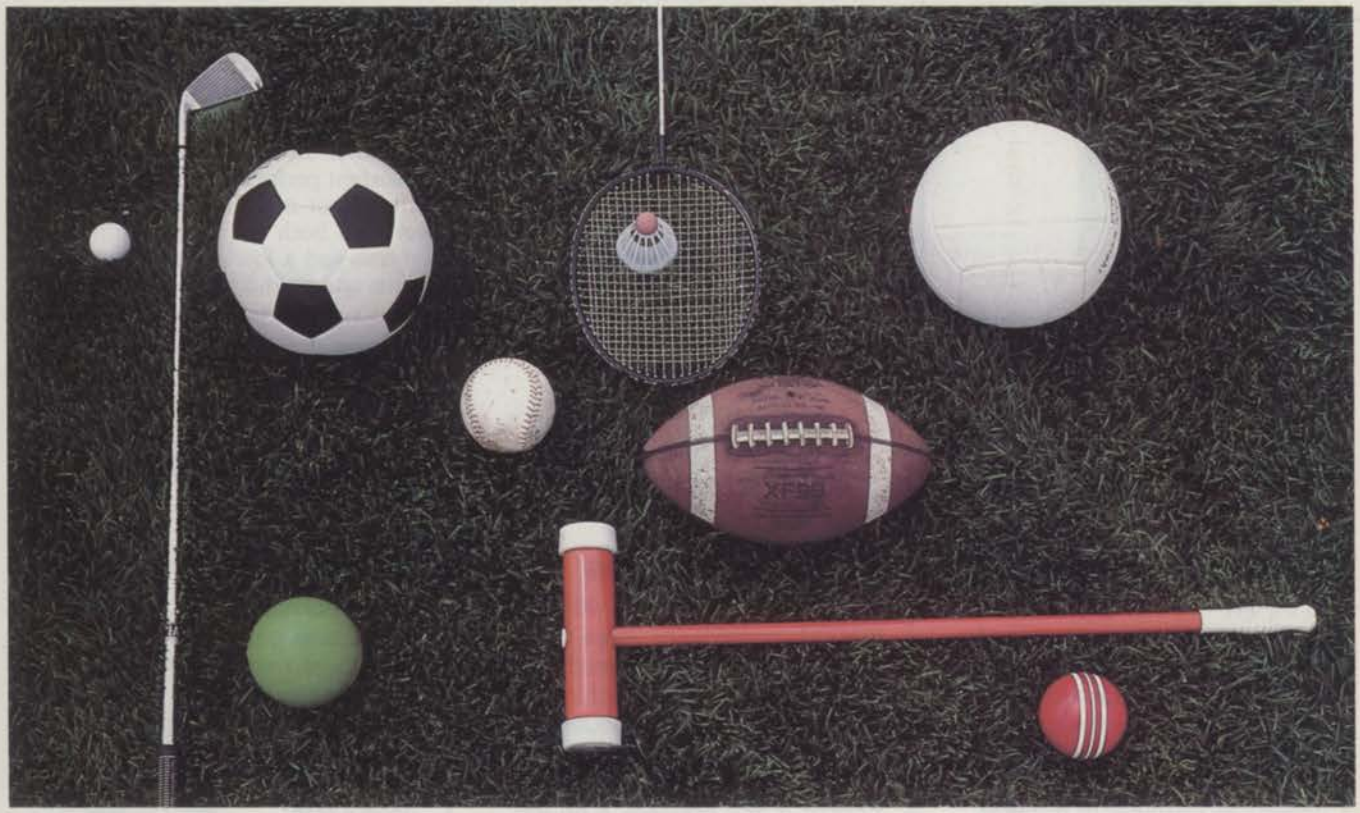
Circle No. 119 on Reader Inquiry Card

Olympic, Apache and Bonanza team up...

...for the 1986 Games!

Triathalawn

Turf-Type Fescue Blend



Triathalawn turf plot, 5 weeks after planting, Hubbard, OR.

This tall fescue *blend* brings you the best of all 3 varieties.

Triathalawn turf-type blend is the best tall fescue seed available. Olympic has earned a reputation as hard wearing, finer leafed, drought tolerant turf variety. With the inclusion of the new generation Apache and Bonanza cultivars, Triathalawn combines the best of the old and new. Triathalawn promises to be the sports, park and home turf of tomorrow. Make Triathalawn a part of your plans *today!*

Triathalawn blend qualifies for Turf-Seed's Blue tag program. Ask your distributor for details.

TURF-SEED

Triathalawn is produced and marketed by

Turf·Seed, Inc.®

P.O. Box 250, Hubbard, OR 97032
503/981-9571 TWX 510-590-0957

Circle No. 143 on Reader Inquiry Card

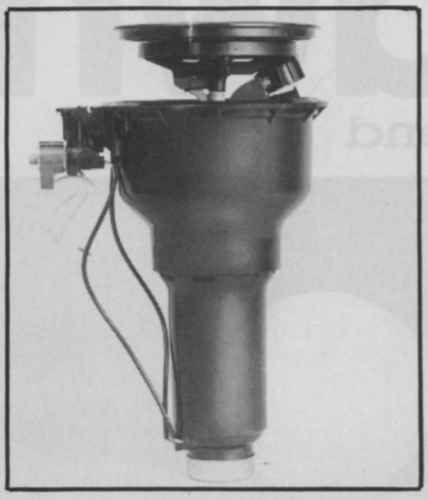
Rain Bird introduces pair of rotors

Rain Bird has incorporated an efficient diaphragm valve design in its new 91DR and 95DR rotors for maximum performance. Because they need less pressure and energy to operate than do traditional piston valve-operated rotors, the new rotors are more cost-efficient.

The full-circle 91DR and full or part-circle 95DR have a flow rate of 28 to 78 gpm and an operating pressure of 60 to 120 psi. The double-nozzle rotors, which are designed for single-row applications, have a spacing range of 90 feet or more.

The rotors are available in valve-in-head electric with adjustable pressure regulation or Stopamatic capability.

Circle No. 190 on Reader Inquiry Card

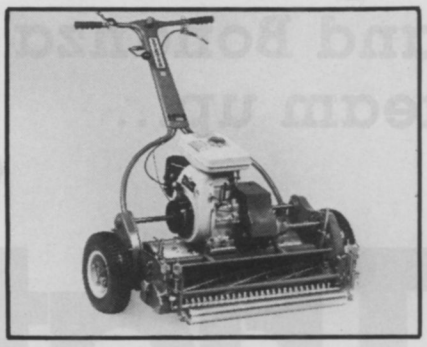


Bunton greensmower cuts down on thatch

Bunton 22- and 26-inch walk-behind greensmowers are now being used by golf course superintendents for greens where thatching is a problem.

The mowers have a powered brush mounted between the front roller and the reel to lift the grass before it is clipped. Clippings are then deposited in a metal or plastic catcher.

The brush is easily adjusted to coincide with the pitch of the bed knife. The height can also be adjusted and it can be disengaged for mowing without the brush. An optional verticut attachment for thatching is also available, but seldom required because of the action of the rotary brush.



Circle No. 191 on Reader Inquiry Card

Reel mower designed for use on compact tractors

Huxleys' TR66 hydraulic reel mower, developed in Alresford, Hampshire, Eng., can be easily and quickly attached to or removed from a compact tractor.

The reel mower features a fully-independent hydraulic drive system for consistent performance, three individually pivot-mounted reels for even work on both level and undulating ground, and a low all-up weight for a minimum ground pressure, maximum stability, and optimum weight distribu-

Clean Fast, Save

Tough sweeper scrubs

TENNANT® 186 sweeps 6 times faster than pushbrooms; covers 34" path, up to 18,000 square ft./hr. Heavy steel wraparound bumper; reinforcing throughout. Powerful brush/vacuum system for nearly 100% dust control. Converts to scrubber in minutes. Removes grease, dirt, oil, other spillage — in one pass. Choose 8 hp gas, LP, or quiet 24 V. battery. "Type EE" available.

Circle No. 150 on Reader Inquiry Card

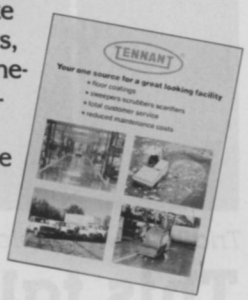
Sweep tight areas

TENNANT® 215 cleans 46" path, 70,000 square ft./hr. More than 20 times faster than hand methods, 4 times faster than walk-behind models. Compact, maneuverable for cleaning congested areas. Excellent dust control. Multi-level hopper dump optional. 8 hp gas or LP engine or 36 V. battery power.

Circle No. 151 on Reader Inquiry Card

Free catalog

shows complete line of sweepers, scrubbers, grime-removing scarifiers, floor finishes, finance plans, and productivity boosters.



Circle No. 152 on Reader Inquiry Card

Free demonstration: no obligation.

TENNANT®

CALL TOLL FREE:
800-328-5727 EXT. 768K

MINNESOTA: 800/742-5685 EXT. 768K

They are long, the days of splendor in the grass. But only if you make short work of the grubs.

Grubs. The spoilers. Once they move in, they'll make short work of your turf.

Take care of the grubs **before** they get a chance to do any damage with ®OFTANOL 2 insecticide.

OFTANOL 2 applied after egg hatch and prior to visible damage, kills any existing grubs, and with its lasting residual power, it makes sure they don't come back.

And OFTANOL 2 has no offensive odor.

For pre-damage control of turf-damaging insects, no other product is more effective or more economical than OFTANOL 2.

OFTANOL 2. Because the days of splendor in the grass were meant to be **long**. Always read the label before use.

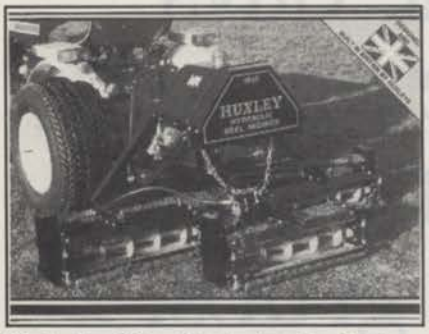
Mobay Corporation
Specialty Products Group
Box 4913, Kansas City, Mo. 64120

OFTANOL 2.
IT STOPS THE SPOILERS.

OFTANOL is a Reg. TM of the Parent Company of Farbenfabriken Bayer GmbH, Leverkusen.

Circle No. 127 on Reader Inquiry Card

tion on all grass areas.



Circle No. 192 on Reader Inquiry Card

Weather monitor provides needed data

The Agri-Scribe is a low-cost, low-maintenance, easy-to-use weather monitor that automatically samples air temperature, relative humidity, leaf wetness, and rainfall each hour, according to the manufacturer, Reuter-Stokes Canada Ltd.

With its six-volt alkaline battery, the device stores the most recent two weeks of data in protected memory. The information can be retrieved either through the display or with an optional printer.

The electronic Agri-Scribe replaces mechanical recorders as the environmental monitor for integrated pest management programs.

Circle No. 193 on Reader Inquiry Card

NEW Arid

TURF TYPE TALL FESCUE

A nationwide progress report in 1984 of turf-type tall fescues **placed Arid No. 1 in mean turf grass quality.** Arid was tops in shade trials with greater disease and insect resistance. Finer leaves, rich, dark green color, low growing with deep roots to withstand high and low temperatures. Also good in humid transition zones.

An ideal sod former with little thatch makes Arid a new, refreshing choice with lower pesticide and fertilizer requirements.

Get complete information and order Arid from your seed wholesaler or sod distributor.

Another fine, quality-controlled product of

Jacklin Seed Company

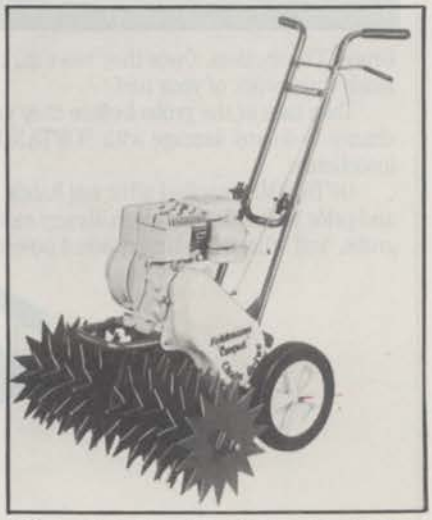
Circle No. 115 on Reader Inquiry Card

Combo aerator/scarifier gives complete coverage

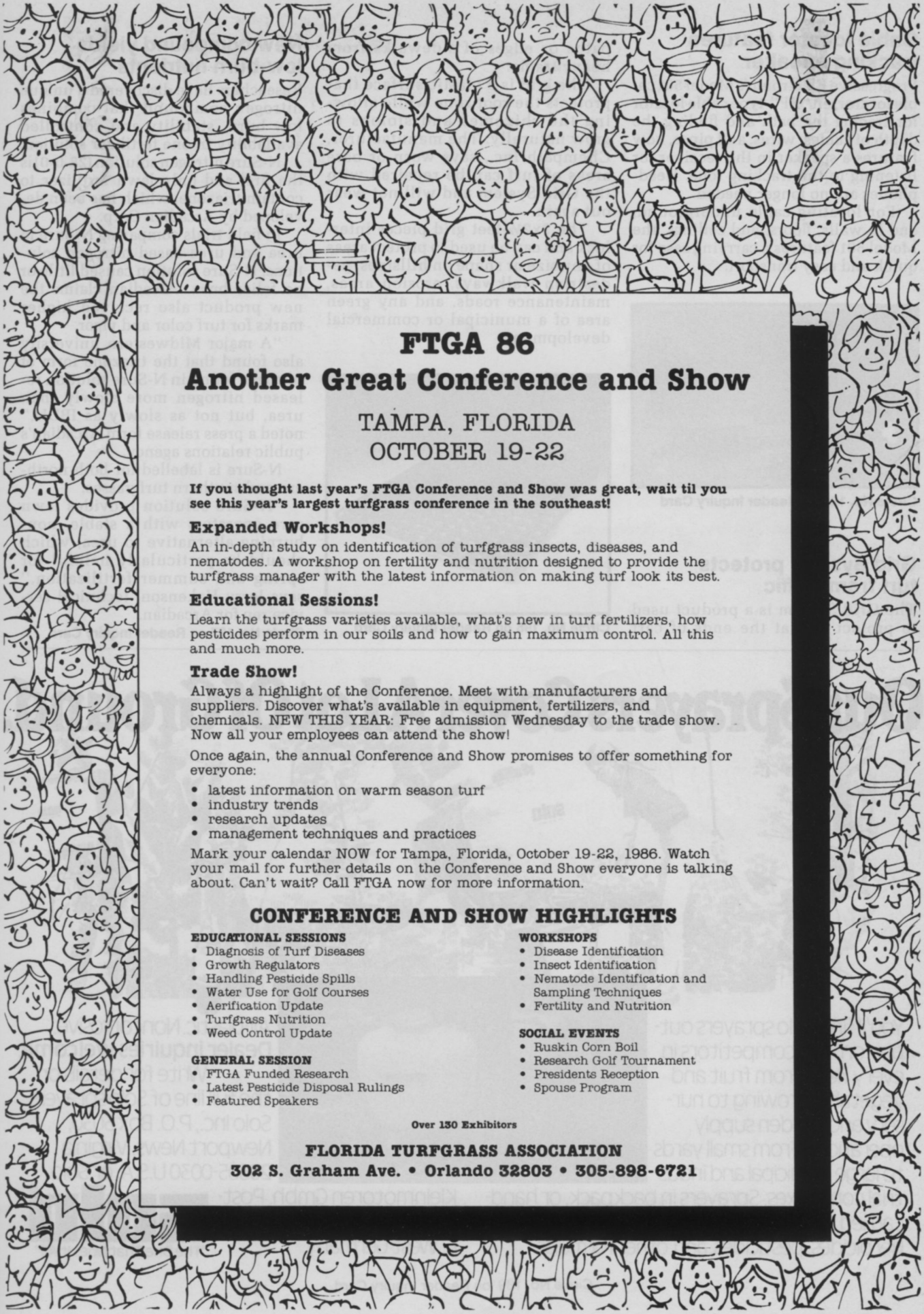
The Feldman Engineering & Manufacturing Company says its new walk-behind lawn aerator/soil scarifier is a durable, low maintenance, profit-producing product for the lawn maintenance service business

As an aerator, it will produce lush turf due to its comprehensive coverage, says the manufacturer. It produces a grid pattern of sliced sod with 2.5-inch centers and an aeration swath of 25 inches. Soil preparation for overseeding of bare sod areas is done quickly with independently rotating tines which propel the machine forward.

The lawn aerator/soil scarifier, at 102 pounds, is powered by a 2- or 3-hp engine and features chain drive, and a automatic single lever hand safety release clutch for forward and neutral.



Circle No. 194 on Reader Inquiry Card



FTGA 86
Another Great Conference and Show

TAMPA, FLORIDA
OCTOBER 19-22

If you thought last year's FTGA Conference and Show was great, wait til you see this year's largest turfgrass conference in the southeast!

Expanded Workshops!

An in-depth study on identification of turfgrass insects, diseases, and nematodes. A workshop on fertility and nutrition designed to provide the turfgrass manager with the latest information on making turf look its best.

Educational Sessions!

Learn the turfgrass varieties available, what's new in turf fertilizers, how pesticides perform in our soils and how to gain maximum control. All this and much more.

Trade Show!

Always a highlight of the Conference. Meet with manufacturers and suppliers. Discover what's available in equipment, fertilizers, and chemicals. NEW THIS YEAR: Free admission Wednesday to the trade show. Now all your employees can attend the show!

Once again, the annual Conference and Show promises to offer something for everyone:

- latest information on warm season turf
- industry trends
- research updates
- management techniques and practices

Mark your calendar NOW for Tampa, Florida, October 19-22, 1986. Watch your mail for further details on the Conference and Show everyone is talking about. Can't wait? Call FTGA now for more information.

CONFERENCE AND SHOW HIGHLIGHTS

EDUCATIONAL SESSIONS
- Diagnosis of Turf Diseases
- Growth Regulators
- Handling Pesticide Spills
- Water Use for Golf Courses
- Aerification Update
- Turfgrass Nutrition
- Weed Control Update

GENERAL SESSION
- FTGA Funded Research
- Latest Pesticide Disposal Rulings
- Featured Speakers

WORKSHOPS
- Disease Identification
- Insect Identification
- Nematode Identification and Sampling Techniques
- Fertility and Nutrition

SOCIAL EVENTS
- Ruskin Corn Boil
- Research Golf Tournament
- Presidents Reception
- Spouse Program

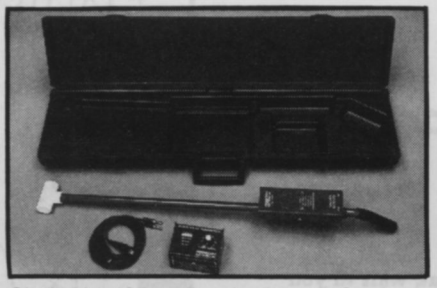
Over 130 Exhibitors

FLORIDA TURFGRASS ASSOCIATION
302 S. Graham Ave. • Orlando 32803 • 305-898-6721

Cable locator features tracking speaker

Progressive Electronic's Model 501 cable locator, an "RF"-type cable locator for tracing the path and finding the depth of cables, wires, and pipes, now features a speaker in the receiver for listening to the tracking tone. Headphones are no longer needed.

For locating cable underground, and in walls, floors, and ceilings, the Model 501 features a carrying case for quick and easy transport.



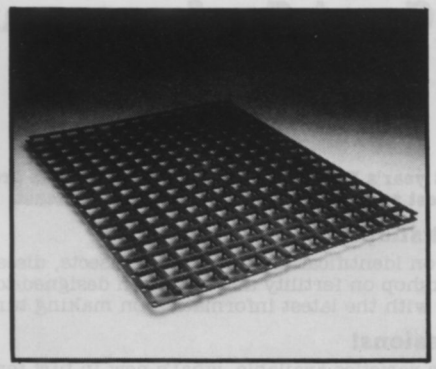
Circle No. 195 on Reader Inquiry Card

Grid System protects turf from traffic

The Grid System is a product used to protect turf at the ends of cart paths or edges of sidewalks from heavy traffic.

The grid is a plastic surface that protects the root zone while allowing the rhizomes and stolons to grow naturally. The manufacturer, Chempath Inc., says worn or bare areas of turf can be repaired with the Grid System and will not wear out again.

The 2x2½-feet grid pieces interlock and can be used to protect areas of any size or shape on hillsides, pedestrian walkways, erosion areas, maintenance roads, and any green area of a municipal or commercial development.



Circle No. 196 on Reader Inquiry Card

New compound yields low-burn nutrients

Reseachers have discovered a unique nitrogen compound that combines low burn, stability and controlled availability in one fertilizer solution.

N-Sure nitrogen solution (28-0-0) is the first and only lawn fertilizer to contain triazone, which has been developed by Arcadian Corp.

In field trials comparing N-Sure to urea and urea-based nitrogen solutions, N-Sure solution caused little or no foliar burn. Arcadian claims the new product also received higher marks for turf color and vigor.

"A major Midwestern university also found that the triazone form of nitrogen found in N-Sure solution released nitrogen more slowly than urea, but not as slowly as IBDU," noted a press release form Arcadian's public relations agency.

N-Sure is labelled for both northern and southern turfgrasses.

"N-Sure solution provides lawn care operators with a stable, nonburning alternative to urea, which should be particularly helpful for spring and summer fertilization," says Jerry Hakenson, technical service rep for Arcadian.

Circle No. 197 on Reader Inquiry Card

Our Sprayers Cover A Lot Of Ground.

You'll find Solo sprayers outperforming competitors in every field. From fruit and vegetable growing to nursery and garden supply operations. From small yards to large municipal and industrial complexes. Sprayers in backpack, or hand-carried models are ideal for applying fertilizers, herbicides, pesticides, and other formulas.

All-plastic. Noncorrosive. **Dealer inquiries welcome.** Write for details on the full line of Solo sprayers: Solo Inc., P.O. Box 5030, Newport News, Virginia 23605-0030 U.S.A. or Solo Kleinmotoren Gmbh. Postfach 20, D-7032 Sindelfingen 6, West Germany.

solo®
"The One That Does It All"

Circle No. 139 on Reader Inquiry Card

Over 1,000 companies have discovered the benefits of membership in the Professional Lawn Care Association of America.

Symbol of Good Practice
PLCAA™
PROFESSIONAL LAWN CARE ASSOCIATION OF AMERICA

What are you waiting for?

Over 1,000 companies have joined the Professional Lawn Care Association of America since it was founded in 1979. Why? Because they know a good thing when they see it.

Where else can the small lawn care company get quality health care insurance at a reasonable cost? And where else can you get PLCAA's exclusive line of publications? PLCAA's Technical Resource Manual, the Safety Manual, and the Management Monograph booklets, our handy series of lawn care business guides, are all FREE to PLCAA members.

How else can you stay in touch with news you need to know? PLCAA members receive Turf Talks, our bimonthly newsletter, full of member news and management tips. PLCAA's Legal Update bulletin, written by General Legal Counsel Richard I. Lehr, is targeted to the green industry. And PLCAA's Environmental Update bulletin keeps members in touch with legislative issues —issues that could threaten your business.

What else do you get for your low PLCAA dues? Access and price breaks on local seminars, audio/visual training programs, sales aids, networking, and much more.

Who else but PLCAA offers all this to the lawn care businessman? Find out for yourself what 1,000 other companies already know—that membership in the Professional Lawn Care Association of America helps your industry and your business. Mail the coupon below or call (404) 977-5222.

P.S.—Don't forget to mark your calendar—**PLCAA/Baltimore '86,** our big 7th Annual Conference and Show, takes place Nov. 17-20, at the Baltimore Convention Center.

I'm interested. Send me more information!

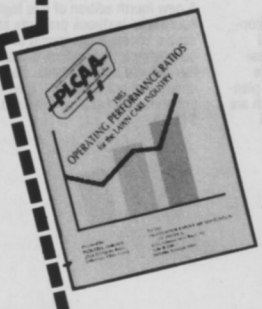
Name_____

Company_____

Address_____

City_____ State_____ Zip_____

Telephone (____) _____



Mail to:
James R. Brooks, Executive Vice President
Professional Lawn Care Association of America
1225 Johnson Ferry Rd., N.E. Suite B-220
Marietta, GA 30067

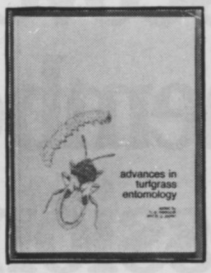
◄**FREE!** Just published and FREE to new members—PLCAA's 64-page Operating Performance Ratios for the Lawn Care Industry, a $150 Value!

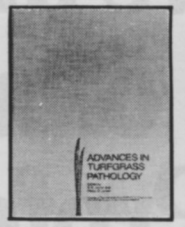
BOOKSTORE

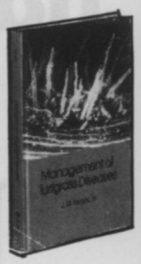
625 - ADVANCES IN TURFGRASS ENTOMOLOGY
edited by Niemcyzk and Joyner
A complete account of the facts presented at the 1980 Symposium on Turfgrass Insects. 200 photographs, tables and graphs make this volume an indispensable reference for anyone connected with the turfgrass industry or research.
$24.95

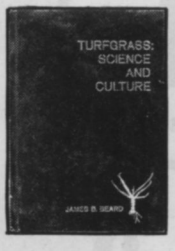
010 - ADVANCES IN TURFGRASS PATHOLOGY
by Joyner and Larsen
Leading U.S. turf pathologists report on turfgrass diseases, phythium blight, snow molds, fairy rings, leaf spot of Kentucky bluegrass in Minnesota, initial and field fungicide screening, turfgrass disease resistance, etc. Contains new ideas on how to combat turfgrass problems. **$27.95**

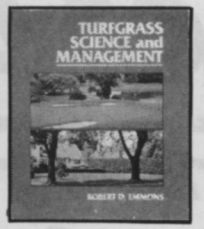
645 - MANAGEMENT OF TURFGRASS DISEASES
by J.M. Vargas
Identifies turfgrass diseases by description and illustration. Includes a holistic approach to healthy turf and lawns. Presents practical management strategies for golf courses, lawns and athletic fields. 204 pages, illustrated. **$26.70**











630 - TURFGRASS: SCIENCE AND CULTURE
by James Beard
Comprehensive basic text and reference source used in many leading university turf programs. Includes findings of current research compiled from more than 12,000 sources. **$30.95**

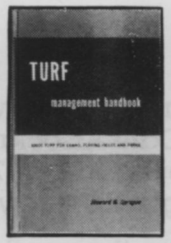
605 - TURFGRASS SCIENCE AND MANAGEMENT
by Robert D. Emmons
Discusses the establishment and maintenance practices used by successful turfgrass managers. Deals with the relevant scientific theory and practical management skills. Provides guidelines for turf maintenance of golf courses, lawns, athletic fields, parks, cemeteries, sod farms. **$25.79**

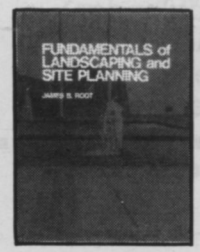
640 - TURF IRRIGATION MANUAL
by James Watkins
A guidebook for engineers, architects, designers and contractors. Keeps pace with the latest developments in turf and landscape irrigation. Specific chapters devoted to rotary sprinkler design systems. Golf course design systems and expanded engineering and reference material. **$23.95**

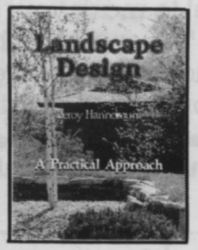
615 - TURF MANAGEMENT FOR GOLF COURSES
by James Beard
Written by an eminent turfgrass researcher, this USGA sponsored text is an ideal reference and "how to" guide. Details all phases of golf course operations including course design and construction, turf management, course administration, irrigation, equipment and disease and pest control. Fully illustrated. **$52.75**

620 - TURF MANAGEMENT HANDBOOK
by Howard Sprague
Practical guide to turf care under both healthy and poor turf conditions. Chapters cover turf in cooler and warmer regions, fertilizer use, regular turf care, weed and disease control and special turf problems. Useful seasonal schedules for management of turf areas. **$19.00**

110 - TURF MANAGER'S HANDBOOK
by Daniel and Freeborg
This specially designed manual by leading turf specialists is a comprehensive, organized approach to turfgrass science and care. An easy, on-the-job reference for planning, purchasing, hiring, construction and plant selection. **$28.95**







305 - FUNDAMENTALS OF LANDSCAPING AND SITE PLANNING
by James B. Root
Covers everything from the evolution of the earth's surface and the primary needs and functions of plant life to site planning and the concept of contours and the methodology of organizing a landscape. Demonstrates environmental design techniques. **$29.50**

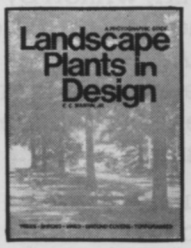
300 - LANDSCAPE DESIGN: A PRACTICAL APPROACH
by Leroy Hannebaum
Geared for the commercial designer/salesperson, this is a one-stop guide to the landscape design process. Covers the entire highly competitive field including design analysis techniques, pointers on land forms, specialized business landscaping methods, environmental design guidelines, specifications, estimations, bids. **$24.95**

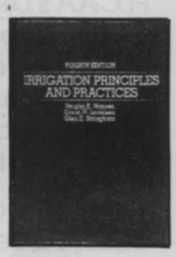
370 - LANDSCAPE OPERATIONS: MANAGEMENT, METHODS & MATERIALS
by Leroy Hannebaum
An in-depth examination that combines technical training in landscape science with methods of accounting, business management, marketing and sales. Discusses effective methods for performing lawn installations, landscape planting and maintenance. Step-by-step accounting calculations are explained in simple terms. **$24.95**

365 - LANDSCAPE PLANTS IN DESIGN
by Edward C. Martin
An annotated photographic guide to the design qualities of ornamental plants and their aesthetic and functional use in landscape designing. Over 600 trees, shrubs, vines, ground covers and turfgrasses are described in non-technical language. Over 1900 photographs. Provides a basis for selecting the best plant materials for any particular use in landscape design. Contains detailed indexes that provide quick reference to particular design qualities and growing conditions. **$55.00**

375 - RESIDENTIAL LANDSCAPES
by Gregory M. Pierceall
An excellent reference for individuals involved in the design and development of plantings and constructed features for residential sites. Illustrations and actual residential case study examples are used to communicate graphic, planning and design concepts which are the focus of this text. **$29.95**

635 - IRRIGATION PRINCIPLES AND PRACTICES
by Hansen, Israelsen, Stringham
A new fourth edition of this highly successful textbook presents essential concepts pertaining to water conveyance, application, storage in the soil and use by plants. Basic underlying principles that govern irrigation practices are stressed.
$48.45



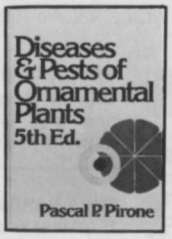


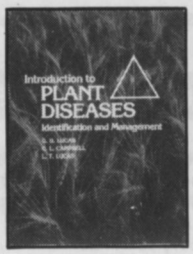
BOOKSTORE

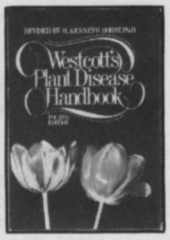
410 - DISEASES & PESTS OF ORNAMENTAL PLANTS
by Pascal Pirone
This standard reference discusses diagnosis and treatment of diseases and organisms affecting nearly 500 varieties of ornamental plants grown outdoors, under glass or in the home. Easy to understand explanations of when and how to use the most effective fungicides, insecticides and other control methods. **$32.50**

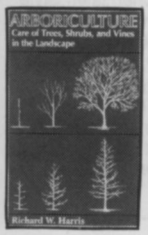
515 - INTRODUCTION TO PLANT DISEASES
by Lucas, Campbell, Lucas
Emphasizes four aspects of plant pathology: how to recognize that a plant has a disease, how to determine the cause of the disease, how to manage diseases, where to seek additional help with disease problems. Gives examples of specific diseases and their management. **$29.50**

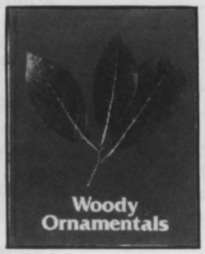
570 - WESTCOTT'S PLANT DISEASE HANDBOOK
by Kenneth Horst
This fourth edition offers professionals the latest diagnostic and disease control information. Plant entries designed to simplify diagnosis, plus background on the classification of plant pathogens. This handbook gives a specific description of each disease, susceptible plants, specific symptoms of the disease, reported locations and control measures for each disease and their side effects. **$39.50**











665 - ARBORICULTURE: THE CARE OF TREES, SHRUBS AND VINES IN THE LANDSCAPE
by Richard W. Harris
Provides comprehensive coverage of complete planting, site analysis, preparation and special planting methods, fully detailed coverage of fertilization, irrigation and pruning guidelines on preventative maintenance, repair and chemical control, how-tos of diagnosing plant problems, practical data on non-infectious disorders, diseases, insects and related pests and pest management. **$38.95**

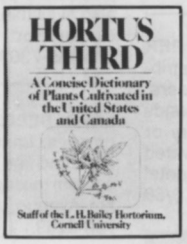
660 - DISEASES OF SHADE TREES
by Terry Tattar
Because shade trees require specialized maintenance rarely used in the forest, this text seeks to aid the arborist in providing necessary care to maintain vigor and prevent shade tree diseases. An in-depth look at infectious and non-infectious tree diseases. Plant pathology not necessary. **$24.50**

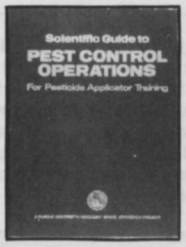
405 - WOODY ORNAMENTALS
by Partyka, Joyner, Rimelspach, Carver
Illustrated plant identification characteristics. Organized in two basic sections: plant identification and plant disorders, this text utilizes 430 color photos, 430 line drawings and 45 black and white photos to simplify identification. **$27.00**

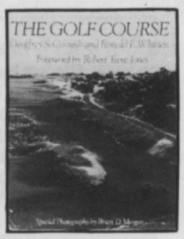
510 - HORTUS THIRD
from Cornell University
A 1,300 page concise dictionary of plants cultivated in the United States and Canada. A reference which every horticulture professional should have. **$125.00**

125 - SCIENTIFIC GUIDE TO PEST CONTROL OPERATIONS
by Truman, Bennett, Butts
Provides a sound basis for studying the technical aspects of pest control. Covers pesticides, safety, health and environmental concerns, equipment, flies and mosquitos, rats and mice, birds and much more. **$35.00**

800 - THE GOLF COURSE
by Cornish and Whitten
The first book ever to give the art of golf course design its due, and golf course architects the credit and recognition they deserve. 320 pages and 150 color and black and white photographs. Traces the history and evolution of the golf course, analyzes the great courses, shows how they were designed and constructed. **$35.00**







ADDITIONAL TITLES

345 - COST DATA FOR LANDSCAPE CONSTRUCTION 1985 $32.00

350 - HANDBOOK OF LANDSCAPE ARCHITECTURAL CONSTRUCTION $45.00

690 - INSECTS THAT FEED ON TREES AND SHRUBS $49.50

720 - SHRUB IDENTIFICATION $12.95

750 - TREE IDENTIFICATION $12.95

760 - TREE MAINTENANCE $49.95

565 - WEEDS $39.95

Mail this coupon to: Book Sales
Harcourt Brace Jovanovich Publications
One East First Street, Duluth, MN 55802

Name _____
Street Address _____
P.O. Box Number _____
City/State/Zip _____
Phone Number ( ) _____
Purchase Order Number _____
Signature _____ Date _____

Please send me the following books. I have enclosed payment* for the total amount.

Please charge to my Visa, MasterCard or American Express (circle one)
Account Number _____ Expiration Date _____

BOOK NUMBER AND TITLE	QUANTITY	PRICE	TOTAL PRICE

*Please add $3.00 per order plus $1.00 per additional copy for postage and handling. _____ (postage & handling)

Please allow 6-8 weeks for delivery.
Prices subject to change.
Quantity rates available on request.

Total Enclosed _____

WTT 886

CLASSIFIEDS

RATES: $1.00 per word (minimum charge, $25). Bold face words or words in all capital letters charged at $1.25 per word. Boxed or display ads: $85 per column inch-1x (one inch minimum); $80-3x; $75-6x; $70-12x. Agency commissions will be given only when camera-ready art is provided by agency. For ads using blind box number, add $5 to total cost of ad. Send ad copy with payment to Dawn Nilsen, WEEDS TREES & TURF, 1 East First Street, Duluth, MN 55802 or call 218-723-9200.

BOX NUMBER REPLIES: Mail box number replies to: WEEDS TREES & TURF, Classified Ad Department, 1 East First St., Duluth, MN 55802. Please include box number in address.

BUSINESS OPPORTUNITIES

WANT TO BUY OR SELL a golf course? Exclusively golf course transactions and appraisals. Ask for our catalog. McKay Golf and Country Club Properties, 15485 N. East Street, Lansing, Michigan 48906. Phone (517) 484-7726. TF

Franchise Opportunity: Industrial Vegetation Control—Box 3187, Enid, OK 73702. Small Investment—Large Return. Kem Weed Trademark. 8/86

Landscape Business or Horse Farm in OKC near new race track. 20.86 acres, 30 x 80 Armco, 3- 30 x 96 greenhouses, fenced, pond and more. Owner may carry part. $750,000. Wally, 405-348-4408 or First Place Realty, 405-478-5020. 7/86

Nine hole golf course on 280 wooded, rolling acres - automatic irrigation. Driving Range, clubhouse and utility building. Equipment and related licenses available. (715) 235-9102 or (715) 235-7167. 8/86

EARN EASY MONEY $2000 TO $5000 PER MONTH. We are looking to set up chemical distributors across the U.S.A. Herbicides, Fertilizers, specialties. All products guaranteed. Thousands of established satisfied customers. Nursery or Garden Center. Ideal location or money motivated individuals call collect Art Morris-Enviromental Resources 305-979-6416. 8/86

FOR SALE

LEASE VACUUM - GIANT VAC: 30 hp. Wisconsin engine. Less than 200 hours. Great Condition. Excellent for municipalities or lawn care companies. $3,275. 205-988-3310. 9/86

Vermeer 630 Stump Grinder. Excellent condition and well maintained. Area Code (717)898-8591 or 898-7443. 9/86

FOR SALE: Jac F10 - 5 gang unit. Good condition - $4100. Three gang Jac poll unit - $850. Excellent condition. Call 501-778-9877. 8/86

FOR SALE: Vermeer, Trailer-mounted 700TH Tree Mover, 7' X 40" ball, good condition, $5,000. 618-498-6811. 8/86

FOR SALE: MIGHTY - SPIKE AERATOR, WITH DOUBLE BIN SEEDER - $1400 - GOOD CONDITION. **WANTED TO BUY:** RYAN SPIKEAIRE - ANY CONDITION. (201) 664-1665. 11/86

2 Jim Dandy Tractors - $850.00 each; 2 Lawn-A-Mat stainless steel combines - $800.00 each; 1 tractor and 1 combine for parts - $350.00 each; 2 flatbed trailers - $150.00 each. Must Sell! (203) 325-3191. TF

TREE FERTILIZATION GUN tested on over a million square feet of trees and shrubs all over the U.S. Good to 500 psi, repairable, non-corrosive. Buy direct from manufacturer, $106.00 (shipping included). Arbor-Nomics, Inc., 5634-A Buford Highway, Atlanta, GA 30071. (404) 447-6037. TF

ATTENTION GOLF COURSE SUPERINTENDENTS: Great Meyer Zoysia for your Fairways and Tees. Guaranteed Bermuda free. Beauty Lawn Zoysia (Cincinnati) 1-513-424-2052. 1/87

BALL BARRIER NETTING: Made of olefin fibers. 6 1/2 feet and 25 feet high. Strong and tough. Will not rust. Easy to handle. For Driving Ranges and Golf Courses. Keep golf balls from straying off-course. J. A. Cissel Mfg. Co., P.O. Box 339, Farmingdale, N.J. 07727. 1-800-631-2234. TF

HYDRO-SEEDER—1976 1000 GALLON BOWIE SKID MOUNTED, COMPLETELY RECONDITIONED LAST YEAR. (513) 667-1346. TF

HYDRO-MULCHERS AND STRAW BLOWERS New and used. **JAMES LINCOLN CORPORATION,** 3220 S. Jupiter Rd., Garland, TX 75041. (214) 840-2440 (TX), (800) 527-2304 (except TX). TF

Spyder Forklift Parts—Mobile Lift Parts has replacement parts for your Spyder. Torque hubs also available. Call or write: Mobile Lift Parts, 5402 Edgewood Rd., Crystal Lake, IL 60014. 815-455-7363. 9/86

LAWN SEED. Wholesale. Full line of top quality grasses. Improved bluegrass varieties, fine fescues and fine bladed ryegrasses. We specialize in custom mixing. Oliger Seed Company, 2705 Wingate Avenue, Akron, OH 44314. Call collect (216) 753-2259. TF

SPECIAL NOTICE—~~Howard~~ Gems 20", 24", 30" are in production again—equipped with Kohler, Wisconsin or diesel. Other rear tine tillers, 8" to 40", 5.7 hp to 24 hp, gas or diesel—from $995. Tractor Tillers and Turf Quakers, 30" to 180"—from $995. Engines, pumps, generators, accessories . . . "Let Us Bid Your Equipment And Service Needs!" G. Gandy Equipment Services, 2031 4th Avenue, Joliet, IL 60433. 815-726-7921. 8/86

BOWIE HYDRO-MULCHERS AND STRAW BLOWERS, New and used. Landscape Supply, Ltd., P.O. Box 22092, Greensboro, NC 27420. (919) 292-2922. 8/86

FINN Model MSW-21 Hayblower with asphalt attachments. (904) 268-5115. 8/86

FOR SALE: Roseman Mowers, 3, 5 & 7 gang. Sod Farm & Complete equipment - make offer. 414-326-5267. 8/86

Business for sale: Tree, Lawn, Ornamental & Weed Control Company in the Heart of Texas. Owner returning to full time teaching. In business since 1971. Sales up 30% in 3 years. Practically no competition locally. Excellent reputation in community. Owner willing to train and/ or consult with qualified buyer. $65,000 includes total business. No real estate. Reply to: LAWNS, P.O. Box 3305, Early Branch, Brownwood, TX 76803. 8/86

LIGHTED PAR 3 GOLF COURSE - 15 ACTIVITY RECREATION FACILITY AND 3 COMMERCIAL BLDGS. Central Indiana, Box 205, Mt. Summit, IN 47361. 317-284-1459, 317-836-4992. 8/86

BROUWER HARVESTER OWNERS! ELECTRIC DEPTH CONTROL. Save time and money with improved quality control. Make depth-of-cut adjustments, on the move, with one button finger tip control. Allows you to cut longer rows through varing soil conditions. $795. 30-day satisfaction guarantee and full-year warranty. Write or call: Shattuck Turf Equipment, 1872 N.W. 82nd, Des Moines, IA 50322, (515) 278-5255. Patent pending. 8/86

2-1985 International 1654 Series Chemlawn Style Units—(1) Tree and lawn spraying combination unit, 6.9 liter diesel 1250 split tank, 2 hose reels with 300 feet of hose each, 50 GPM trees and 10 GPM lawn, 15,000 miles, like new condition, $20,995. Lawn Spraying Unit—6.9 liter diesel 1250 gallon split tank, 100 gallon bullet tank, 2 hose reels with 300 feet of hose each, 10 GPM, 15,000 miles, like new condition, $19,995. Call Paul at 516-231-9092. 8/86

LAWN CARE BUSINESS FOR SALE—Baltimore, Maryland area, 400 accounts, $70,000+ in sales, financing available. Write WTT Box 394. 9/86

Tree Spraying-Lawn Care Company: One of Long Island's (NY) leaders in professional tree and shrub and lawn care. Fleet of 10 trucks. 5000 accounts in a growing market. Excellent opportunity for lawn care growth. Contact Bob Lamar (516) 231-9092. 9/86

Landscape Design RUBBER STAMPS
FREE BROCHURE
Landscape Design Kits
Interior Plant Sets
Tree Stamps Books
AMERICAN STAMP CO.
12290 Rising Rd., suite 200-w
Wilton, CA 95693 (916) 687-7102

HELP WANTED

Landscape Sales Representative. Large established commercial contractor located in Washington, D.C., seeking an accomplished sales person to join first class sales staff. Candidate must possess 2 years experience. Ability to turn large profitable volume and desire to deliver highest quality landscape possible to customers. Forward resume to: Personnel Administrator, P.O. Box 10862, Rockville, MD 20850. Salary, benefits, commensurate with experience. 8/86

Commercial Landscape Estimator. Large established Contractor located in Washington, D.C., seeking self-motivated individual to manage "state-of-the-art" computer estimating program. Experience should include: 2 years. Good organizational skills, general computer skills, irrigation, landscape, and maintenance understanding. Forward resume to: Personnel Administrator, P.O. Box 10862, Rockville, MD 20850. Salary, benefits, commensurate with experience. 8/86

LANDSCAPE ARBORIST FOREMAN: We are seeking a person skilled in shade tree and ornamental pruning as well as landscape planting. Should be a self-motivated leader interested in doing quality work. MCA and spray license helpful. Full-time, year-round position offering top pay and a benefits package including medical, vacations, uniforms and more! Call Needham, MA 617-444-0994-anytime! 8/86

LANDSCAPE MAINTENANCE. Top notch Washington D.C. area landscape firm is looking for a responsible foreman to do residential maintenance, emphasizing quality tree, shrub and bed care. We are also seeking a spray technician trainee to assist with our integrated pest management program etc. Good pay with benefits. No weekend work. Willingness to work hard and produce is essential. Related education or experience preferred. Send resume and references to: Garden Gate Landscaping, 821 Norwood Road, Silver Spring, MD 20904. 9/86

Fleet Superintendent/Equipment Coordinator to perform maintenance on diesel/gas equipment 80 h.p. to 1 h.p. and coordinate the use of equipment for a grounds maintenance service company throughout the state of Florida. Please send resume to Quandt-Ayer Enterprises, P.O. Box 271880, Tampa, FL 33688. 8/86

Landscape Maintenance Foreman: South Florida firm seeking individuals who are experienced in all aspects of maintenance including irrigation. Send resume to: G & E, 4540 S.W. 75th Ave., Miami, FL 33155. 8/86

Sales and Service person needed in Virginia Beach area. Only experienced, licensed applicators with excellent customer service skills will be considered. Send resume and references to: Lawn Medic of Tidewater, P.O. Box 1786, Chesapeake, VA 23320. TF

Sales Professional: To the Greens Industries in Mid-Atlantic region; must have "2 years" sales experience selling to lawn care, landscape, and tree care firms. A good knowledge of the business and customer's needs is necessary. Excellent compensation package offered. Please send resume to: Moyer & Son, Inc., 113 East Reliance Road, Souderton, Pennsylvania 18964. Attn: Specialty Fertilizer. 8/86

Landscape Architects/Supervisors (project foremen) join a nationally acclaimed firm looking to expand into its second generation Long Island area supports a high budget landscape industry. Year round employment, company benefits and continuing education available. Experienced and aggressive people send resume to: GOLDBERG & RODLER, INC., 216 East Main Street, Huntington, New York 11743. 8/86

LANDSCAPE CONSTRUCTION SUPERVISOR—Rapidly growing mid-south landscape contractor is seeking a well-trained, self-motivated individual for its new division office. Five years minimum experience with knowledge of scheduling, purchasing in multi-crew supervision. Send job and salary history to: Reinhold Landscape, 3388 Cazassa, Memphis, Tennessee 38116. 9/86

SOD FARM MANAGER: Established top quality Sod Farm serving California and Nevada seeks experienced and knowledgeable leader to manage all aspects of sod production and equipment. Hands on experience and knowledge of soils, fertilization and irrigation essential. Qualified applicants send resume with all pertinent history and requirements to WTT Box 389. 8/86

ChemLawn Franchise Branch Manager. Directs branch operations. Minimum 2 years experience as assistant manager or 1 year as manager. Must possess excellent communication, organizational, and interpersonal skills. Full benefits. Send resume to: Tim Stagg, 1652 42nd Street, N.E., Suite D, Cedar Rapids, Iowa 52402. 319-393-2914. 8/86

Irrigation Designer & Installation Supervisor—Experience a must!! Send resume to P.O. Box 157, Fairburn, GA 30213. 9/86

LANDSCAPE LABORERS & FOREMEN—Experience a must!! Call 404-964-9998. 9/86

Superintendent, Building and Grounds: Direct contractors and maintenance staff of two full time, three part time and one seasonal in maintaining roads, buildings, equipment, and grounds of our 355 acre nature preserve and arboretum. Qualifications: Experience in building and grounds maintenance and a degree or demonstratable ability to succeed in related post high school formal education. Salary: Package including house and utilities valued at $21,000 plus family health, dental and pension. Deadlines: August 25, 1986. Contact: Send resume to Charles Gleaves, Director, The Hayes Arboretum, 801 Elks Road, Richmond, Indiana 47374. 8/86

WANTED: Position open for a person with knowledge and experience of clearing for commercial and utility work. Must be able to bid and get the jobs done at a profit. All the latest equipment at your disposal. Top Pay + Bonus, Vehicle furnished, pension plan, profit sharing, Blue Cross and Blue Shield. Openings in Northeast and Southeast. Write WTT Box 392. 8/86

LANDSCAPE MAINTENANCE DIVISION MANAGER: Established landscape construction and nursery firm in Central Florida is looking for a self-starting manager to build a commercial maintenance division. Salary plus strong incentive bonus for an experienced professional with the desire to achieve. Call Mr. Singh (305) 831-8101. 8/86

HELP WANTED: Land Estimator - KT Enterprises, Inc. is expanding its landscape installation department & has a challenging new position in our fast growing firm for the right person with exceptional sales ability. Must be experienced in take-offs and costing. Progressive design/build firm doing business in Washington, D.C. Metro area. Excellent salary, benefits & growth potential. Call John Warren 703-922-8540. 8/86

OUTSTANDING OPPORTUNITY FOR AN ARBORIST with sales management experience to join rapidly growing, full-service tree care company. All benefits and incentives. Call or send resume to SAVE-A-TREE OF WESTCHESTER, INC., c/o Daniel Van Starrenburg, 225 Railroad Ave., Bedford Hills, NY 10507, 914-666-8202 9/86

PROJECT MANAGER: Excellent opportunity for career and goal oriented individual to work with a commercial landscape firm in Atlanta, Georgia. Must be experienced in all aspects of landscape construction and willing to assume total responsibility. Goods salary, benefits and incentive program. Scapes, Inc., 404-956-7500. 8/86

TURF PRODUCTION MANAGER: Expansion has created a production manager position on our farms in S.C. (approx. 500 acres). We expect five or more years experience in sod production and an academic background in turf management or a related field. This is an excellent opportunity for a growth-oriented individual. 1-800-328-2110. 8/86

CHAIRPERSON GOLF COURSE/LANDSCAPE PROGRAMS: Master's degree in Plant/Soil Sciences, Business/Public Administration and two years' experience in Golf Course/Landscape Operations. Earned Doctorate preferred. Responsibilities include student recruitment, administration, public relations w/industry, student placement, supervision of faculty/staff, minimal teaching. Salary: $24,000 plus chairperson supplement, salary negotiable based on experience/qualifications. Deadline: Open. Send resume to Lake City Community College, Rt. 3, Box 7, Lake City, Florida 32055, (904)752-1822 ext. 313. EA/EO EMPLOYER. 7/86

HELP WANTED-A diversified growing landscape company in the Northeast is looking for experienced people for Landscape Design, Construction and Maintenance as Supervisors and Managers. Salary to be determined by experience. Send Resume including work and salary history to: Control Env. Services, Inc., 2605B Durham Road, Bristol, PA 19007, Attn: J.R.B. 9/86

LESCO, INC., a leader and complete supplier of equipment and products to the turf care industry, is seeking aggressive, mature, customer oriented individuals to join the team as:

Manager
Service Center

These positions will have P/L responsibility for the management of a warehouse operation serving the professional lawn care industry; including local sales development, inventory control and accounts receivable. Ideal candidates should have previous selling experience in lawn care, nursery or garden stores or possess a horticulture related educational background. Positions are available in various Florida metropolitan areas.

Our firm has an established growth pattern and record of profit sharing. Interested and qualified candidates should submit resume and salary history in confidence to:

Manager Human Resources
LESCO, INC.
Rocky River, OH 44116
An Equal Opportunity Employer

USED EQUIPMENT

1978 ASPLUNDH WHISPER CHIPPER— 4 cylinder, 12 in. $5000. 312-481-9128. TF

TREE TRIMMING EQUIPMENT—Aerial basket trucks with chip boxes and chippers (1970 - 1975). Priced to sell—offers accepted. Call (218) 724-7622, or write ATS, P.O. Box 3280, Duluth, MN 55803. TF

HI-RANGERS AERIAL BASKETS 65', 57', and 53'. Skyworkers aerial baskets 65', 50', 40'. Vermeer stump cutter 1560, 6. Vermeer tree spade 66, TS 44. Asplundh bucket and brush chippers, Bean sprayer, 9 ton trailer. Parkway Tree Service, 12026 W. Cherry, Wauwatosa, Wisc. 53226. (414) 257-1555. TF

NEW AND USED EQUIPMENT—Asplundh, Hi Ranger and Lift-all forestry bucket trucks, Chipmore wood chippers. Mirk, Inc., (216) 669-3567, (216) 669-3562, 7629 Chippewa Road, Orrville, Ohio 44667. TF

BUCKET TRUCKS, Straight Stick, Corner Mount and Knuckle Boom Cranes. Brush Chippers - New Morbark Disc Type, New Woodchuck Drum Type. Best prices anywhere. Used Chippers - Asplundh, Woodchuck, etc. 2 to 8 usually in stock. Sprayers, Dumps, stakes, Log Loaders, Crew Cab Chip Box Dumps, Railroad Trucks, 50 in stock. Sold as is or reconditioned. Opkyke's Hatfield (Philadelphia Area) 215-721-4444. TF

EDUCATIONAL OPPORTUNITIES

EDUCATIONAL OPPORTUNITIES—Learn Golf Course Superintending, Park Supervision, Irrigation Management, Landscape Contracting. Fully accredited, VA approved, expanded faculty and facilities: major ongoing turfgrass research project. Many job placement opportunities, for information contact: Department of Golf Course Operations Landscape Technology: Western Texas College, Snyder, Texas 79549. 9/86

MISCELLANEOUS

FREE PARTS CATALOG—If you own a 36"—48"—52" walk-behind mower and you feel you're paying too much for parts, call Preco Distributors toll-free and request our parts catalog. **BELTS, BLADES, GRASS CATCHERS, WHEELS AND LOTS MORE!** Replacement parts that fit: **BOBCAT, BUNTON, KEES, EXMARK & OTHERS.** 1 day shipping coast to coast available. All parts carry a 90-day warranty. Don't wait, call 24 hours a day. **TOLL-FREE 1-800-428-8004, in Mass. 413-596-5505. PRECO DISTRIBUTORS, 2400 BOSTON ROAD, WILBRAHAM, MA 01095.** TF

Amsoil Two-Cycle oil as featured in February "Job Talk." Full line of synthetic lubricants. Dealerships available. Boyce Distributors, P.O. Box 12921, Charleston, SC 29412. (803) 762-0732. 10/86

Enhance Your Surroundings! Write for your detailed Catalogue on Landscaping. Leo Berbee Bulb Company. P.O. Box 370, Marysville, OH 43040. 513-642-0511. 8/86

WANTED TO BUY

WANTED: Large Lindig and Royer Shredders. Lewis Equipment. 320 Third Street S.W., Winter Haven, FL 33880. (813) 294-5893. 4/87

Wanted to buy tree clearing companies. Will pay top dollar for the right company and personnel. Write WTT Box 393. 8/86

ORKIN LAWN CARE

Wants to acquire lawn care/pest control companies doing $1,000,000 or more annual revenue. Sell us your business. Stay and grow with us if you wish. Reply to Dick Lyon (404) 888-2165.

Wanted to buy **HYDRO SEEDER.** Please send photo. Johnson Hydro Seeding Corp., 13751 Travilah Road, Rockville, Md. 20850 301/340-0805. TF

WANTED
LAWN CARE COMPANIES CUSTOMER LISTS FOR CASH

We are interested in acquiring lawn care companies or customer lists for CASH. Prefer volume to be $500,000 or above. If you are located in the Midwest, East, or South we want to talk to you.

Contact our agents:
Ed Wandtke or Rudd McGary
c/o All-Green Management Association
1033 Dublin Rd.
Columbus, OH 43215
(614)481-8873
STRICT CONFIDENTIALITY MAINTAINED

LAWN MAINTENANCE

We are interested in acquiring commercial and residential lawn maintenance companies or customer lists for cash. Prefer volume to be $250,000 or above. If you are located in the Midwest, East, or South, we want to talk with you.

Contact our agents:
Ed Wandtke or Rudd McGary
c/o All-Green Management Associates
1033 Dublin Rd.
(614)481-8873
STRICT CONFIDENTIALITY MAINTAINED

Circle No. 132 on Reader Inquiry Card

ANNOUNCING... THE SECOND ANNUAL

Landscape Exposition

March 3-5, 1987 O'Hare Exposition Center
Rosemont, Illinois

THE NATIONAL SHOW...
Covering the entire spectrum of the commercial landscape and lawn care industry.

THE NATIONAL SHOW...
With a strong Regional base of 16,000-plus professionals within a 300 mile radius.

THE NATIONAL SHOW...
Encompassing 60,000 net square feet of exhibit space.

THE NATIONAL SHOW...
Presenting a three-day conference program directed at *every* specialty in the industry.

THE NATIONAL SHOW...
Featuring an innovative "Future Landscape" section highlighting tomorrow's products and designs.

THE NATIONAL SHOW...
Offering attractive travel discounts, incentives and sweepstakes to visitors.

Take advantage of the best offer you'll have in 1987: to be part of the year's most exciting marketplace. Call or write now for more information.

Produced and Managed By: HBJ HBJ EXPOSITIONS & CONFERENCES

Sponsored By: *Weeds Trees & Turf* and *Lawn Care Industry* Magazines

Mail this now and plan to attend or exhibit:

Landscape Exposition

P.O. Box 5555, 50 Washington Street,
Norwalk, CT 06854
Phone: **(203) 853-0400 (800) 243-2815**

YES! I'M INTERESTED!
Please send me, at no cost or obligation, an
☐ Exhibitor's prospectus and application
☐ Attendee's information package

Name _____ Title _____
Company _____
Address _____
City _____ State _____ Zip _____
( ) _____
Telephone _____
Business Function _____

FYLKING
FYLKING
FYLKING
FYLKING
FYLKING
FYLKING
FYLKING
FYLKING
FYLKING

Remember the name because you're going to hear a lot about it. Fylking Kentucky bluegrass lawn is something special. It forms a dense, thick turf, more disease and drought resistant. Greens up earlier, stays greener longer. Fylking can be cut as low as ¾ inch, even ½ inch for home putting greens. Proven over many years of international certified testing. Ask your seed distributor for Fylking.

Fylking — the World's Fair grass.

FYLKING
KENTUCKY BLUEGRASS
U.S. Plant Patent 2887

Another fine, quality-controlled product of Jacklin Seed Company.

Circle No. 116 on Reader Inquiry Card

EVENTS

August

Northeast Ohio Nursery and Equipment Field Day, Aug. 12, Lake County Nursery, Perry, Ohio. Contact Fred Buscher, OARDC, Wooster, OH, 44691. (216) 263-3831.

American Horticultural Society annual meeting, Aug. 13-16, San Francisco, Calif. Contact Sharon Barnes, AHS, PO Box 0105, Mount Vernon, VA, 22121. (703) 768-5700.

Professional Lawn Care Association of America regional seminar, Aug. 14, Lenexa (Kan.) Holiday Inn. Contact Doug Moody, PLCAA, 1225 Johnson Ferry Rd. NE, Suite B-220, Marietta, GA, 30067. (404) 977-5222.

Penn State Turfgrass Field Days, August 14-15. Joseph Valentine Memorial Turfgrass Research Center, University Park, Pa. Contact Dr. Joseph M. Duich at (814) 865-9853 or Christine E. King, Pennsylvania Turfgrass Council, (814) 355-8010.

Landscapers Expo 1986, August 22-24. Manatee Civic Center, Palmetto, Fla. Contact Merchandise World Inc., P.O. Box 1374-W, Venice, FL 34284; (813) 485-5888.

Southwest Outdoor Power Equipment & Lawn/Garden Market, August 22-24. Amon G. Carter Exhibit Hall, Ft. Worth, Texas. For information call or write Southwest Outdoor Power Equipment & Lawn/Garden Market, 4629 Mark IV Parkway, Ft. Worth, TX 76106; (817) 625-5562.

SEPTEMBER

Ohio Turfgrass Research Field Day, Sept. 11. Ohio State University, Columbus, Ohio. (614) 422-2601 for information.

Florida Nursery and Allied Trades Show, Sept. 12-14. Orange County Civic Center, Orlando, Fla. For more information, call or write: FNGA, 5401 Kirkman Rd., Suite 650, Orlando, FL 32819; (305) 345-8137.

World Fertilizer Conference, Sept. 14-16. San Francisco Hyatt Regency, San Francisco, Calif. Contact The Fertilizer Institute, 1015 18th St. NW, Washington, D.C., 20036.

Virginia Tech Turfgrass Research Field Days, Sept. 16-17. Blacksburg, Va. Contact J.R. Hall III; (703) 961-5797.

Oklahoma Turfgrass Research Field Day, Sept. 20. Oklahoma Turfgrass Research Center, one mile west of Oklahoma State University Campus, Stillwater, Okla. Contact Michael Kenna at (405) 624-5404 for information.

International Garden and Leisure Exhibition (GLEE) Sept. 21-23. National Exhibition Center, Birmingham, England. For information contact Inter Garden Promotions, 60 Claremont Rd., Surbiton, Surrey KT6 4RH England. Phone (390) 2211 1601. Telex: 291561.

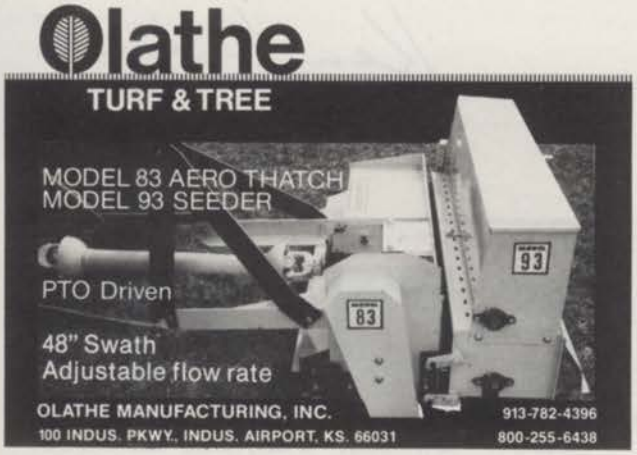
Wisconsin Counties Association Fourth Annual Products, Services and Equipment Exhibition, Sept. 21-23. Paper Valley Hotel and Conference Center, 333 W. College Ave., Appleton, WI 54913.

Society of Municipal Arborists 22nd meeting and trade show, Sept. 28-Oct. 1. Marriott Pavilion, St. Louis, Mo. Contact Bruce Vawter, Society of Municipal Arborists, c/o Monsanto Corp., 800 N. Lindbergh P1A, St. Louis, MO 63137. Phone (314) 694-2394.

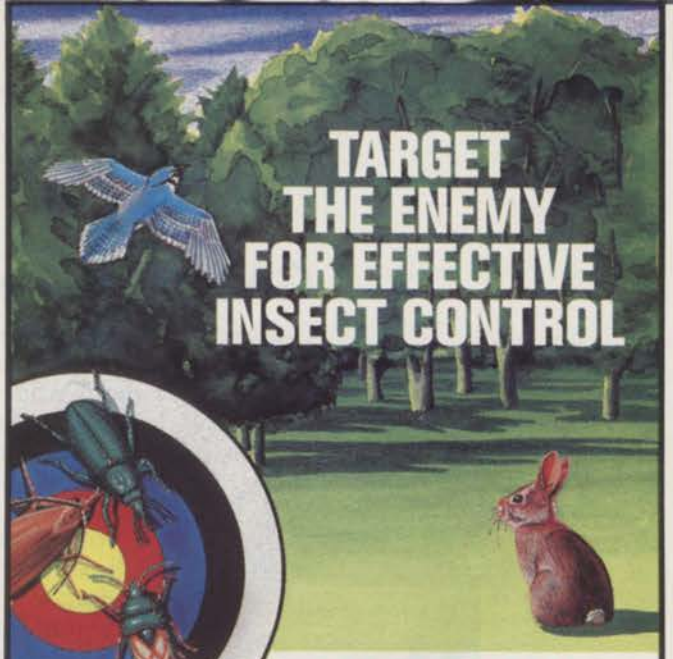
AD INDEX

NO.	ADVERTISER	PAGE
101	Brouwer Turf Equip.	43
102	Ciba-Geigy Corp.	16-17
103	Cushman Turf	46
104	Cushman Frontline	7
105	Cushman Ryan	53
106	Elanco Products/Rubigan	57
107	Elanco Products/Rubigan	57
108	Elanco Products/Balan	15
109	Elanco Products/Surflan	15
111	Fairmont Hydraulics	CV2
112	Florida Turfgrass Assoc.	63
113	Garfield Williamson	30
114	Hoffco, Inc.	12
115	Jacklin Seed Co.	62
116	Jacklin Seed Co.	74
117	Jacobsen/Div. of Textron	49
118	Jonathan Green, Inc. (reg)	65
119	Lawn-Wright, Inc.	58
120	Lebanon Chem. Corp.	75
251	Lesco, Inc.	38-39
150	Lesco, Inc.	29
122	Lofts, Inc.	CV4
123	Mallinckrodt, Inc.	58
124	Milliken Chemicals	58
125	Mobay Chemical/Dyrene	37
126	Mobay Chemical/Oftanol	61
127	Mobay Chemical/Oftanol	61
128	Monsanto Agri. Products	4-5
129	Monsanto Agri. Products	CV3
130	Nor-Am Chem. Co.	32-33
131	Northrup King	41
132	Olathe Mfg.	72
133	Olathe Mfg.	75
149	O.M. Scott & Sons	35
134	Oregon Tall Fescue	54
135	Pickseed West Inc.	55
136	Plant Marvel	25
137	Rain Bird Sale, Inc.	3
138	Rhone-Poulenc, Inc.	23
139	Solo, Inc.	64
140	Tee-2-Green	21
150-152	Tennant Co.	60
142	Turf Seed, Inc.	59
143	Turf Seed, Inc.	1
144	Turf Vac Corp.	13
145	Union Carbide Corp.	26-27
146	Weather-Matic	45
147	Zoecon-Mavrik/Pentac	51

This index is provided as an additional service. The publisher does not assume any liability for error or omissions.



Circle No. 133 on Reader Inquiry Card



DURSBAN*

Win the war against chinch bugs, sod webworms, billbugs and other insect enemies that invade your turf. Lebanon has the ammunition you need—two insect control formulations containing DURSBAN Insecticide.

Greenskeeper Insect and Grub Control and Country Club 19-4-6 with DURSBAN

DURSBAN sets its sight on harmful insects for effective surface and soil control, but it won't harm birds, pets or other lawn allies. It also doesn't build up toxic levels in the soil and is the only insecticide with published human toxicity data.

Lebanon's full-weight, high-density products containing DURSBAN are easy to apply with any spreader —one application gives you the weaponry you need.

Enlist the Total Turf Troops

Of course, DURSBAN is backed up by Lebanon Total Turf Care and its complete network of sales representatives, distributors and service professionals. Lebanon is a major distributor for The Dow Chemical Company. And because we're 'Partners with Dow', additional DURSBAN formulations are available.

For more information on DURSBAN, or our full line of fertilizers, SCU blends, combination products and straight chemical products, call our **Greenline** today at **1-800-233-0628;** in Pennsylvania, call **717-273-1687.** And start winning the battle against insects and other turf enemies . . . from the ground up.

Lebanon
TOTAL TURF CARE

A division of Lebanon Chemical Corporation
P.O. Box 180 • Lebanon, PA 17042

BETTER TURF CARE FROM THE GROUND UP.

*DURSBAN is a registered trademark of The Dow Chemical Company.

Circle No. 120 on Reader Inquiry Card

Giving the readers what they want

I never thought I'd agree with James Kilpatrick, the syndicated newspaper columnist, until his column appeared in the local paper the other day. Jim usually talks about what a guy Ronnie Reagan is or how bad the local paper in Sioux City, Iowa, butchered a headline.

This time Jim wrote about knowing your reader and told of a young reporter in South Carolina who, in her review of the movie "Cocoon," used the phrase "old f___" to describe the old men in the movie. The word—certainly no stranger to most—denotes excessive gas. The cub reporter didn't know her conservative audience, didn't know readers would be offended, and consequently is now in the unemployment line.

We at WEEDS TREES & TURF don't want to join her. That's why we're taking an even more scrutinizing look at our audience (you) and what you want to see in the magazine.

We're a people-oriented magazine, out in the field at local shows and at national events. We will remain there but you may see less of the personality-type profiles in WT&T. Our Readex studies indicate the personality profiles are consistently the lowest-read of any feature stories. (Readex provides both editorial and advertising interest reports to clients like us.)

Other Readex reader surveys ask you what type of information you find most useful in the magazine. In the survey of the March 1986, issue, respondents gave multiple answers. Ninety-three percent said weed, fertilizer, disease, and insect guides are most useful. Another 65 percent said "how-to" articles are useful. The remainder: agronomic technical, 57 percent; products, 54 percent; news, 53 percent; advertisements, 50 percent; **personality profiles, 14 percent.**

The percentages, though based on just one issue, are consistent with our Readex scores dating to 1981. Of the 11 most highly read WT&T articles dating to 1981, five were guides and two were technical pieces. Personality profiles and some of our regular departments dominate the bottom half of the list.

The message is clear. You won't see a discontinuation of the personality profiles. We'll continue running them, but you'll see more information near the top of the story and in shorter form. Ideally, a reader will be able to glean the pertinent information he needs off the story's first page.

We will continue to bring you the guides and technical articles you say you want. But we'll keep our personality.

Ken Kuhajda

Ken Kuhajda, managing editor

WT&T Editorial Advisory Board

Doug Chapman
Horticulturist
Dow Gardens
Midland, MI

J.R. Hall
Extension Agronomist
VPI & SU
Blacksburg, VA

Kent Kurtz
Professor
Horticulture
Cal Poly-Pomona

Harry Niemczyk
Professor
Ohio State University
Wooster, OH

A. Marty Petrovic
Asst. Professor
Cornell University
Ithaca, NY

Robert Shearman
Assoc. Professor
University of Nebraska
Lincoln, NE

All around the golf course, Roundup® herbicide is as versatile as it is affordable. Just one application can take the place of six string trimmings over the course of a season. Even turf renovation is an inexpensive project with Roundup.

ROUNDUP WILL SAVE YOU TIME AND MONEY ALL AROUND THE COURSE.

Dollar for dollar, Roundup can give you better weed control–with less labor–than time-consuming mechanical or hand weeding. In one shot, you can control over 110 broadleaf weeds and grasses, more than 35 brush and hardwood species–even poison oak and kudzu. Roundup controls them roots and all, so they won't grow back.

This season, give Roundup more of the dirty work, wherever weeds appear. And give your men more time to keep the greens, fairways and other high-visibility areas looking their best.

*Based on cost of one gallon of 2% spray solution of Roundup alone to treat low growing vegetation.

FOR A FREE ROUNDUP TRIMMING & EDGING GUIDE, CALL TOLL-FREE 1-800-225-1212 EXT. 263.
IN NEBRASKA, 1-800-343-4300 EXT. 263.

ALWAYS READ AND FOLLOW THE LABEL FOR ROUNDUP HERBICIDE. Roundup® is a registered trademark of Monsanto Agricultural Company.

©Monsanto Agricultural Company 1986. RNC-6-208B

Circle No. 129 on Reader Inquiry Card

Monsanto

AFFORDABLE EFFECTIVE

Rebel

TURF TYPE TALL FESCUE

"It needs less fertilizer and less water. That makes our sod more profitable for us and better for our customers."

Tom and George Betts
Tuckahoe Turf Farms, Inc., Tuckahoe, NJ.

Walter Betts and son, Tom, check the Rebel turf-type fall fescue before the sod is delivered.

"**We've** got over 500 acres of sod. Where we have Rebel we need only half as much fertilizer and half the water. That's more profit for us. But it's also good for our customers.

"Take the South Jersey Pinelands, for example. They're *very* strict about landscaping because of risk to the aquifers. But they do allow our Rebel sod there simply because it needs less fertilizer and water. And it does well in full sun, yet it's the closest we've come to a perfect shade grass.

"Actually, this sod is 90% Rebel turf-type tall fescue; with 10% Nassau Kentucky bluegrass. That mix does real well on athletic fields. We laid our Rebel sod on the Holy Spirit High School field last fall. Put it right on subsoil. They watered it once a week, fed it in early August, Labor Day, and again at Thanksgiving. They just played three games on that field but you'd never know it. And they love it because their games are televised. They want Rebel for their soccer field now too."

Three generations of sod producers: Walter Betts, his son George and grandson John.

Ed Burns, Athletic Director of Holy Spirit H.S. in Absecon, NJ, expresses his satisfaction to Lofts' John Morrissey.

There's a lot to like about Rebel turf-type tall fescue. Whether you want less maintenance, better shade performance or a turf that can take rough treatment, you'll get it all with Rebel!

LOFTS

Lofts Inc.

World's largest marketer of turfgrass seed.

Bound Brook, NJ 08805 (201) 356-8700 • (800) 526-3890

Lofts/New England
Arlington, MA 02174
(617) 648-7550

Lofts/Great Western
Albany, OR 97321
(503) 928-3100 or
(800) 547-4063

Sunbelt Seeds, Inc.
Norcross, GA 30071
(404) 448-9932 or
(800) 522-7333

Lofts/Maryland
Beltsville, MD 20705
(301) 937-9292

Oseco Inc.
Brampton, Ontario
Canada L6V2L2
(416) 846-5080

To locate the Lofts' distributor nearest you, call: (800) 526-3890 (Eastern US) (800) 547-4063 (Western US)

Circle No. 122 on Reader Inquiry Card